BULLETIN OF MISCELLANEOUS INFORMATION No. 7 1932
ROYAL BOTANIC GARDENS, KEW

XLII.—CONTRIBUTIONS TO THE FLORA OF TROPICAL AMERICA : XIII.*

A. H. G. Alston (British Museum).

Pteridophyta collected by the Oxford Expedition to British Guiana, 1929.

The collection enumerated here was made by Mr. P. W. Richards, a member of the Oxford Expedition to British Guiana, 1929.

The expedition, under the leadership of Major R. W. G. Hingston, spent nearly four months camping in the forest on the Moraballi Creek, Essequibo River, from August to November. All the ferns listed are from Moraballi Creek unless otherwise stated.

Mr. Richards collected 81 species, all but 4 of which were from Moraballi Creek. 298 species (of Filices) are known from British Guiana, but of this number 103 species are recorded only from Roraima and the Canuku Mts., leaving 195 " low-country " species. In addition, 1 species of *Equisetum*, 9 species of *Lycopodium* and 19 species of *Selaginella* are recorded. This total of 327 pteridophytes compares favourably with that of Porto Rico, 285 (Maxon), but falls short of the enormous total, 760, recorded by Knuth from Venezuela. As the areas of these countries are so different it is evident that the comparison of mere numbers is unsatisfactory. Mr. Sandwith estimates the number of phanerogams found at Moraballi Creek at 550–600 ; if this be taken as 575, it would give a Pteridophyte quotient of nearly $3\frac{1}{3}$, using Raunkiaer's method (Bot. Tidsskr. xxxvii, 148). Though Raunkiaer gives no figures for any continental area in the tropics, this figure is about what might be expected as it is similar to those given by tropical islands with continental floras, e.g. Formosa 4, Hongkong 2·4, and much smaller than the figure given by many oceanic islands, e.g. Tahiti 12·2, Seychelles 7·8.

The ferns of Moraballi Creek have markedly South American affinities ; and while 46 are only found south of a line drawn from Panama to the Lesser Antilles, only 29 extend their range to the north of this line. 35 species are recorded as terrestrial, 32 as epiphytic, while 5 are extensive climbers, 2 both epiphytic and terrestrial, and 2 found on rocks. Only 11 out of 35 terrestrial species extend to Central America or the Greater Antilles, while 16 out of 32 epiphytic species have this range. The epiphytic species are therefore mostly more widely distributed than the terrestrial species. Of the epiphytic species 11 may be classed as tree-top species, of which 6 extend to Mexico or the Greater Antilles.

*Continued from *K.B.* 1932, 229.

Trichomanes (Féea) diversifrons (*Bory*) *Mett.*

Wet, clayey sides of small stream in extreme shade, 47.

Distr. French Guiana (*Sagot* 744 !), Panama (*Cuming* 1127 !), Colombia (*Barclay* 895 !), N. Brazil (*Spruce* 2182 !) and Mexico (fide Baker).

T. (Féea) botryoides *Klf.*

Mixed with the preceding species, 47B.

Distr. Panama and Peru (fide Posthumus).

T. (Hemiphlebium) labiatum *Jenm.*

Trunk of small tree in undergrowth of Mora forest, 85 ; trunk of small tree in damp, not very deeply shaded place, 222.

Distr. Endemic. Only collected once before at Bartica Grove, *Jenman* 2348.

T. (Hemiphlebium) cordifolium (*Fée*) *Alston*, comb. nov.—*Didymoglossum cordifolium* Fée, Fil. Ant. t. 28, fig. 4 (1866). *T. muscoides* Sw. var. *cordifolium* Jenm. B.W.I.F. 22 (1898).

Trunk of trees to about 8 ft. in damp forest near creek, 28 ; base of large tree in mixed forest, 703.

Jenman states that his variety is exceedingly abundant in Trinidad and Guiana. He evidently took a very wide view of the species as he included many Old World specimens. *T. muscoides* Sw. has been reduced to *T. hymenoides* Hedw. by Lindman (Ark. Bot. i. 12). These specimens agree well with Fée's figure, which appears to represent a distinct species, separated from *T. hymenoides* Hedw. by its orbicular, cordate fronds.

T. (Hemiphlebium) Kraussi *Hk. et Gr.*

Twigs of small tree in undergrowth of Mora forest, 64 ; tree trunk in undergrowth, 320 ; trunk of small tree in opening in Morabukea-Greenheart forest, 742.

Distr. W. Indies to Bolivia and Brazil.

T. (Lacostea) Ankersii *Parker.*

Small tree in damp Mora forest, 65 ; tree stump in sandy swamp forest, 285 ; stem of young tree, 749.

Distr. Pará (*Spruce* !), Colombia (*Barclay* 905 !).

T. (Lacostea) pedicellatum *Desv.*

Trunk of small tree in damp place in deep shade, 25 ; trunk of small tree near ground in Mora forest, 58.

Distr. Lesser Antilles and Pará (*Spruce* !).

T. (Pseudachomanes) arbuscula *Desv.*

Upper side of mossy trunk of tree overhanging creek, almost submerged in wet season, 204 ; mossy rotting trunks in shady, sandy forest, 183.

Distr. French Guiana, Surinam and Brazil. (Most W. Indian specimens are referable to *T. holopterum* Kze.).

Pseudachomanes Presl (1849) is an older name than *Ptilophyllum* v.d.B. (1861) non Morris (1841) ; moreover the latter was originally proposed as a generic name.

T. (Neuromanes) pinnatum *Hedw.*

Dry, sandy bank, fairly light shade, 182.

Distr. W. Indies and Brazil.

Apparently best distinguished from *T. pennatum* Klf. by the more numerous, shorter pinnae.

T. (Neuromanes) pennatum *Klf.*

Floor of Morabukea forest, sandy soil, deep shade, 6, 77.

Distr. Trinidad and Colombia.

As *Neuromanes* Trevis. has been granted generic rank by Presl, Fée, Trevisan and v.d. Bosch, it seems worth retaining as a section. The name *Neurophyllum* Presl is invalidated by *Neurophyllum* Torrey et Gray. The species seem, through *T. Vittaria* DC., to be more closely allied to *Féea* than to *Ptilophyllum.*

T. (Achomanes) Martiusii *Fournier* in Bull. Soc. Bot. Fr. xv. 148 (? *Presl*).

Mossy trunks of trees near ground, margin of creek, and other light places in sandy forest, rare, 181 ; 92 ft. above ground in fork of Dakamaballi tree among moss, Morabukea forest, 806.

Distr. Trinidad (*Purdie* !), French Guiana (*Sagot* 777 !), near Pará (*Spruce* !).

This appears to be this species in Fournier's sense, but seems different from Martius' figure. It is referred to *T. pilosum* Raddi by Posthumus. I hesitate to propose a new name without a revision of the whole group.

The genus *Trichomanes* was first described by Linnaeus, Corollarium Plantarum, 29, no. 991, in 1737 ; he quoted only *Polypodium crispum calyciferum* Plum., which is *T. crispum* Linn. and is therefore the type. Now *T. crispum* is referred by Presl, Hymenophyllaceae, p. 17, to his section *Achomanes*, while *T. pyxidiferum* Linn. and *T. scandens* Linn. are referred by Presl to *Eutrichomanes.* Presl must then have regarded one of these two species as the type of *Trichomanes.* For this reason I have dropped the sectional name *Eutrichomanes.* Prantl's section *Eutrichomanes* contained no Linnean species !

T. (Crepidomanes) hymenophylloides *v.d.B.*

Mossy granite boulders by small stream, 790.

Distr. Tropical America and Africa.

T. (Crepidomanes) eximium *Kze.* sensu lat.

Mossy trunk of small tree in very shady place, 37.

Distr. Mexico to Brazil.

Both this and the preceding species are included under *T. pyxidiferum* Linn. by Posthumus.

T. (Davalliopsis) elegans *Rich.*
Hollow in tall mixed forest, clayey soil, rare, 203.
Distr. Lesser Antilles to Brazil and Colombia.

Hymenophyllum polyanthos (*Sw.*) *Sw.*
Trunk of small tree near ground in moist very shady place, 26 ; mossy trunk overhanging creek, 33 ; horizontal mossy branch of small tree in undergrowth in fairly well-lit place, 223 ; among moss on upper branch 64 ft., 544 ; branch of Fukadi, 80 ft. above ground, in Mora forest, 644.
Distr. Tropical America and Africa.

H. ciliatum (*Sw.*) *Sw.*
Small, mossy tree-trunk by creek, 34 ; upper branches of Kautaballi, among moss, over 60 ft. from ground, 521.
Distr. Mexico to Southern Brazil.

CYATHEACEAE.

Hemitelia strigosa (*J. Sm.*) *Alston*, comb. nov.—*Alsophila strigosa* J. Sm. in Journ. Bot. i. 666 (1842). *Hemitelia Parkeri* Hk. Ic. Fil. vii. t. 643 (1844). *Hemitelia multiflora* var. *Parkeri* Bak. in Mart. Fl. Bras. i. pt. 2, 314 (1870).
Sandy soil in deep shade in Morabukea forest, 16 ; in clearing in Greenheart forest, common in such places, 350 ; small clearing in low bush, 400.
Distr. French Guiana, Surinam and North Brazil.

H. guianensis *Hk.* Ic. Fil. vii, t. 648 (1844).—*H. multiflora* Posthumus, Ferns Surinam, 30 (1928) pro parte, non Spreng.
Sandy bank of creek, edge of Morabukea forest, 1 ft. from the water, 9 ; edge of creek, 31 ; sandy, rather swampy, low forest near creek, common on creeks above camp, 180.
Distr. Endemic ?
The constantly different habitats of these closely allied species are remarkable.

Amphidesmium rostratum (*H. B. K.*) *J. Sm.* in Journ. Bot. i. 201 (1842). *Metaxya rostrata* (H. B. K.) Presl, Tent. 60 (1836) ; Bower in Ann. Bot. xxvii. 443–450 (1913). *Alsophila rostrata* (H. B. K.) Mart. Ic. Cr. Bras. 64, t. 39 (1834). *Aspidium rostratum* H. B. K. Nov. Gen. & Sp. i. 12 (1815). *Polypodium rostratum* H. et B. ex Willd. Sp. Pl. v. 193 (1810) non Burm. f. (1768). *P. blechnoides* Rich. in Act. Soc. Nat. Hist. Par. i. 114 (1791) nomen. *P. Humboldtii* Poir. Encycl. Suppl. iv. 497 (1816). *Alsophila blechnoides* Hk. Sp. Fil. 35 (1844).
Moraballi Creek, without notes, 7.
Distr. Northern South America to Peru and Brazil.

The interrupted annulus, as figured by Bower, l.c., t. 32, p. 9, appears to constitute a good generic character.

Alsophila oblonga *Kl.*

On humus on the floor of Mora forest, 227 ; rocky forest by side of stream, 750.

Distr. Surinam.

POLYPODIACEAE.

Stigmatopteris (Peltochlaena) varians (*Fée*) *Alston*, comb. nov. —*Nephrodium varians* Fée, 11 mem. 88, t. 24, fig. 2 (1886). *Dryopteris varians* O. Ktze. Rev. Gen. ii. 814 (1891).

Bank of stream in forest, 22.

Distr. Trinidad.

A very rare species of which no specimen could be found either at the British Museum or Kew.

Thelypteris (Ctenitis) funesta (*Kunze*) *Alston*, comb. nov.— *Dryopteris funesta* (Kze.) Hieron. in Hedw. xvi. 347 (1907). *Aspidium funestum* Kze. in Linnaea, ix. 96 (1834). *Dryopteris protensa* var. *funesta* C. Chr. Mon. Dryopt. ii. 91 (1920).

Moraballi Creek, without label, 8 ; very deep shade on sandy bank of stream in forest, 23 ; loamy soil, 51.

Distr. Panama and Lesser Antilles to North Brazil.

The generic name *Filix* Hill, Useful Fam. Herb. p. 141 (1754), has not been employed because it appears to be inadequately published as a genus (see Hill's preface, p. xiii).

The generic name first occurs, as θηλυπτερίς (θῆλυς = female) in the works of Theophrastus (332 B.C.) and Dioscorides (c. 100 A.D.). It was then used, according to the Loeb edition of *Theophrastus*, for *Pteridium aquilinum* (L.) Kuhn. It was taken up by Ruppius in 1718 in the " Flora Jenensis " p. 322. Ruppius has two species, *Thelypteris* (sphalmate *Thelypeteris*) *Dioscoridis* Rupp. (=*Pteridium aquilinum*) and *Thelypteris palustris, non ramosa* Rupp. (=*Thelypteris palustris* Salisb.). He apparently regarded *T. Dioscoridis* as the type as he discusses the differences from *Filix* under that species.

Schmidel when he took up Ruppius' genus in 1762 (I have not seen the 1747 edition) chose the second species as the type.

It has been argued (Mackenzie in Amer. Fern Journ. xvii. 117–119) that Schmidel was making use of a uninominal nomenclature : this is clearly untrue as he uses the name *Commelina* for three distinct species (tt. xxx. xl & xlix). That Schmidel regarded his names as generic is clear from p. 104 where he speaks of Micheli's genus *Sphaerocarpus*. That Schmidel considered his genera to be published is apparent from his proposal of a new genus (*Teganium*, p. 67).

Thelypteris (Meniscium) serrata (*Cav.*) *Alston*, comb. nov.— *Dryopteris serrata* (Cav.) C. Chr.

Cuyuni River : Camaria landing, on swampy ground by stream in second growth, 840.

Distr. Mexico and W. Indies, south to Brazil and Bolivia.

Tectaria plantaginea (*Jacq.*) *Maxon* in Contr. U.S. Nat. Herb. x. 494 (1908).—*Polypodium plantagineum* Jacq. Coll. Bot. ii. 104, t. 3, fig. 1 (1788). *Aspidium plantagineum* Griseb. Abh. Ges. Wiss. Gött. vii. 286 (1857).

Lateritic soil on shady bank of stream in mixed forest, 752.

Distr. Costa Rica and W. Indies, southwards to Brazil.

T. trifoliata (*Linn.*) *Cav.* Descr. Pl. p. 249 (1802).—*Polypodium trifoliatum* Linn. Sp. Pl. 1087 (1753). *Aspidium trifoliatum* Sw. in Schrad. Journ. Bot. 1800, 30 (1801).

With *T. plantaginea*, 753.

Distr. W. Indies to Colombia and Venezuela.

Cavanilles mentions *Polypodium trifoliatum* Linn. in his original description of *Tectaria*, but the actual transfer was not made until three years later. As it is the only species mentioned, it is clearly the type.

Cyclodium meniscoides (*Willd.*) *Presl.*

On tree trunks, 1 ft. from ground, in Morabukea forest, 15 ; in low bush, on ground and epiphytic about 2 ft. from ground, 799.

Distr. Trinidad to Peru and North Brazil.

Polybotrya caudata *Kze.*

Rhizome climbs on large tree to 20–30 ft., palm swamp, 803 (sterile).

Distr. Trinidad and Panama to Brazil.

Bolbitis (Anapausia) semipinnatifida (*Fée*) *Alston*, comb. nov.—*Gymnopteris semipinnatifida* Fée, Acrost. 83, t. 44 (1845).

Among rocks, on lacteritic soil, on banks of small stream, 756.

Distr. Trinidad (*H. Prestoe* !), Venezuela (*Rusvy & Squires* 380 !).

This species is separated from **Bolbitis aliena** (*Sw.*) *Alston*, comb. nov. (*Acrostichum alienum* Sw.), by the scattered free veinlets and broader, serrate lobes of its leaves.

The American ferns referred to *Leptochilus* by Christensen are placed under *Bolbitis* Schott by Copeland (Phil. Journ. Sci. B. xxxvii. 335). This species and its allies are, as noted by Christensen in Bot. Tidsskr. xxvi. 285, only distantly related to *Bolbitis serratifolia* (Mert.) Schott, and should form a distinct section or subgenus, for which the name *Anapausia* (Presl. pro gen.) is available. The type of *Anapausia* was *A. acuminata*, a synonym of **Bolbitis nicotianifolia** (*Sw.*) *Alston*, comb. nov. (*Acrostichum nicotianifolium* Sw.).

Oleandra articulata (*Sw.*) *Presl*, Tent. 78 (1836) ; Maxon in Contr. U.S. Nat. Herb. xvii. 394 (1913).—*Aspidium articulatum*

Sw. in Schrad. Journ. Bot. 1800, ii. 30 (1801). *A. nodosum* Willd. Sp. Pl. v. 211 (1810). *Oleandra nodosa* Presl, l.c.

Trunk of Greenheart, 57 ft. from ground, edge of Mora forest, 373.

Distr. Guatemala and W. Indies to Bolivia and S. Brazil.

Nephrolepis rivularis (*Vahl*) *Mett.*

Large clump on humus at foot of large Mora tree in damp, fairly well-lit place, 224 ; on fallen tree in light forest, 53 (sterile and therefore doubtful).

Distr. W. Indies and Southern Mexico to Brazil.

Saccoloma inaequale (*Kze.*) *Mett.*

Loamy forest floor in deep shade, 54 ; Mora forest, 153 ; floor of forest in deep shade, 225.

Distr. W. Indies and Mexico to Northern South America.

Lindsaya dubia *Spreng.*

Loamy soil in opening in forest, 148 ; clearing in same tuft as 113 (*L. surinamensis*), scarce, 114.

Distr. Venezuela and N. Brazil.

L. falcata *Dryand.*

Sandy soil, floor of forest in moist places, frequent, 21 (?) ; loamy soil in opening in forest, 147 ; low sandy forest, 184 ; wet place, 404.

Distr. Panama and Lesser Antilles, southwards to Brazil and Colombia.

L. surinamensis *Posth.*

Clearing, scarce, 113 ; loamy soil in opening in forest with 147 (*L. falcata*) and 148 (*L. dubia*), 154.

Distr. Surinam.

A new record for British Guiana. Identification from Posthumus' figure.

L. guianensis (*Aubl.*) *Dryand.*

Humus at base of tree, Morabukea forest, 30 ; sandy soil, Morabukea and Wallaba forest, rather light, 347 ; open Wallaba forest on alluvial soil, 465.

Distr. French Guiana and Surinam, Lesser Antilles ?

L. crenata *Klotzsch.*

Loamy floor of dark forest, 55.

Distr. Endemic.

This species is not represented at the British Museum or at Kew and I am indebted to Dr. C. Christensen for the identification.

L. nitidissima *Rich. ex Willd.* Sp. Pl. 423 (1810).—*L. lancea* Posth. Ferns. Surinam, 75 (1928).

Sandy ground in forest near creek, 32 ; in low bush on sandy creek bank, 156 ; on ground in open, rather sandy forest, 281 ; in clearing in Greenheart forest, 351 ; without notes, 467.

Distr. Trinidad and Brazil.

Asplenium serratum *Linn.*

Moraballi Creek, without notes, 76.

Distr. W. Indies and Mexico to Brazil.

A. cuneatum *Lamk.*

Among moss on large bush-rope near ground in palm swamp, 802.

Distr. W. Indies, Surinam and Venezuela.

A. salicifolium *Linn.* Sp. Pl. 1080 (1753) ; Maxon in Contr. U.S. Nat. Herb. x. 476 (1908).—*A. semicordatum* Raddi ; Posth. Ferns Surinam, 82 (1928).

Fallen tree in mixed forest, 140.

Distr. Mexico and W. Indies to Colombia and Brazil.

Salpichlaena volubilis (Kl. f.) J. Sm. in Hk. Gen. t. 93 (1841)—. *Blechnum volubile* Klf. Enum. 159 (1824).

Fairly light place by small creek in swamp forest, 318.

Distr. Guatemala and Lesser Antilles to Colombia and South Brazil.

S. Hookeriana (*O. Ktze.*) *Alston*, comb. nov.—*Spicanta Hookeriana* O. Ktze. Rev. Gen. ii. 821 (1891). *Lomaria volubilis* Hk. Sp. Fil. iii. 39, t. 150 (1860). *Blechnum volubile* var. *lomarioidea* Bak. in Mart. Fl. Bras. i. pt. 2, 428 (1870).

Rather light places by stream, 20 (sterile and therefore doubtful).

Distr. Brazil and French Guiana.

Distinguished from *S. volubilis* by its lomarioid fertile pinnules and membranous sterile leaflets.

Stenochlaena japurensis (*Mart.*) *Griseb.* ; Underw. in Bull. Torr. Bot. Cl. xxxiii. 598 (1906).—*S. marginata* Posth. Ferns Surinam, 91 (1928).

On small trees and shrubs in the undergrowth, 306 ; climbing to about 4 ft. on young tree in low bush, 758 ; near first falls of Cuyuni River, climbing up tree 10 ft., swampy low bush, 819.

Distr. French Guiana, Trinidad and Brazil.

Underwood, l.c. 595, states that " if the description is correct, the plant [*Stenochlaena marginata* (Schrad.) C. Chr.] is not even a *Stenochlaena*."

Pityrogramma calomelanos (*Linn.*) *Link*, Handb. Gewächs. iii. 19 (1833), errore *calomela* ; Maxon in Contr. U.S. Nat. Herb. xvii. 173 (1913).—*Ceropteris calomelanos* (Linn.) Und. in Bull. Torr. Bot. Cl. xxix. 632 (1902).

Old camp site by creek, 202.

Distr. Tropical America, Africa and Asia. Adventive in many localities.

Pityrogramma is an older generic name for *Ceropteris*.

Adiantum (Hewardia) olivaceum *Bak.*

Loamy soil on steep rocky slope in mixed forest, 754.

Distr. Venezuela.

A. phyllitidis *J. Sm.*

With *A. olivaceum* Bak., 755. Also on lateritic soil.

Distr. Surinam, Venezuela, Peru and Guadeloupe (fide Posthumus).

A. obliquum *Willd.*

Cuyuni River; Camaria landing, under bushes in secondary growth, 842.

Distr. French Guiana, Surinam and Panama.

Some of the fronds of these specimens are bipinnate and the internodes vary in length, but the distinct midribs point to this species rather than to *A. latifolium* Lamk. as interpreted by Posthumus. Posthumus' key does not work well for this species.

A. tomentosum *Kl.*

In deep shade in sandy hollow near river, 26.

Distr. French Guiana, Surinam and North Brazil.

A. hirtum *Splitg.*

Loamy soil on floor of Morabukea forest, 335.

Distr. Surinam and French Guiana.

Adiantum terminatum *Kze.*

Loamy soil on floor of dark forest, 52; in low bush, 800.

Distr. Surinam, French Guiana and North Brazil.

Only recorded from the Canuku Mts. in British Guiana, but apparently common in Surinam.

Pteridium arachnoideum (*Klf.*) *Maxon* in Journ. Wash. Ac. Sc. xiv. 89 (1924).—*Pteris arachnoidea* Klf. Enum. 190 (1824). *Cincinalis arachnoidea* Trevis. Syll. Sporoph. Ital i. 31 (1874). *Pteris aquilina* var. *arachnoidea* Bak. in Mart. Fl. Bras. i. pt. 2,403, t. 24, f. 11–13 (1870). *P. aquilina* var. *esculenta* Hk. Sp. Fil. ii. 197 (1858).

Cuyuni River; Camaria landing, secondary growth by portage road, 839.

Distr. W. Indies and Mexico; southwards to Argentina (fide Maxon).

Distinguished from *P. aquilinum* (L.) Kuhn and all other species except *Pteridium esculentum* (Forst.) Nakai by the presence of shallow rounded lobes in the decurrent portion of the pinnules. The fronds of *P. esculentum* are glabrous beneath, those of *P. arachnoideum* are downy on the rhachis and costa. The generic name *Filix* Ludw. (1857) appears to have a good claim to replace *Pteridum* Gled. ex Scop., which was a *nomen abortivum*.

Cochlidium linearifolium (*Desv.*) *Maxon* ; C. Chr. in Bot. Ark. vi. 18 (1929).—*Monogramme linearifolia* Desv. in Berl. Mag. v. 302, t. 7, fig. 5 (1811).

Mossy branches of small trees near ground on edge of creek, 115 ; mossy branches of tree overhanging creek, 185 ; upper branches of Kokiritiballi tree, 438.

Distr. Colombia.

Hecistopteris pumila (*Spreng.*) *J. Sm.*

Trunks of small trees among mosses, near edge of creek, 27 ; base of small tree in Morabukea forest, 82 ; tree trunk in ground in low, sandy forest, 208.

Distr. Mexico and W. Indies to Brazil.

Christ, in Hedwigia xliv. 366, has described three subspecies of *H. pumila*, but I am unable from his descriptions to identify these specimens with any of them.

Polytaenium guayanense (*Hieron.*) *Alston*, comb. nov.—*Antrophyum guayanense* Hieron. in Hedw. lvii. 212 (1916).

Trunk of small tree in fairly open, sandy forest, 200 ; trunk of tree a few feet up, 760.

Distr. Trinidad, French Guiana and Surinam (fide Hieronymus.)

Doubtfully distinct from *P. Jenmani* (Bened.) Bened. & *P. cajenense* (Desv.) Bened., of which I have seen no authentic material.

Anetium citrifolium (*Linn.*) *Splitg.*

Trunk of small tree near ground (c. 3 ft.) in swampy Mora forest, 369 ; among moss, creeping up trunk of small tree in undergrowth of Mora forest, 628.

Distr. Guatemala and W. Indies to Northern Brazil.

Eschatogramme Desvauxii (*Kl.*) *C. Chr.* in Dansk Bot. Ark. vi. 24 (1929).—*Taenitis Desvauxii* Kl. in Linnaea xx. 431 (1847). *Eschatogramme furcata* Posth. Ferns Surinam p. 120 (1928) non C. Chr.

Branch of Morabukea tree, 36, 73, occasional on tall trees, more rarely on 20 ft. trees ; fallen from tree, 157.

Distr. Trinidad, French Guiana, Surinam to Brazil.

Polypodium (Ctenopteris) duale *Maxon* in Contr. U.S. Nat. Herb. xvii. 399 (1913).—*P. serrulatum* (Sw.) Mett. Fil. Hort. Lips. 30 (1856) non Sw. (1801).

Mossy branches of small trees overhanging creek, 116 ; on felled tree in " mainap," 349.

Distr. Mexico and W. Indies to Brazil, also in West Africa and in Mauritius.

I have not used *Eupolypodium* as a subgeneric name because Christensen (Dansk Bot. Ark. v. no. 22, 6) states that the affinity of *Polypodium vulgare* is with the subgenus *Goniophlebium*. *Ctenopteris* (Blume pro gen.) may be distinguished as a subgenus.

Polypodium (Ctenopteris) nanum *Fée.*

Upper branches of tall tree, 81 ; upper part of main trunk of tall tree, 100 ; trunk of small tree 6 ft. from ground in Wallaba forest, 632.

Distr. French Guiana and Brazil.

I am indebted to Dr. W. R. Maxon for the identification of this and the following species.

P. consimile *Mett.*

Mossy trunk of small tree in opening in Morabukea-Greenheart forest, 746.

Distr. Venezuela and Colombia.

Campyloneurum phyllitidis (*Linn.*) *Presl*, Tent. 190, t. 7, figs. 18–20 (1836).—*Polypodium phyllitidis* Linn. Sp. Pl. 1083 (1753).

Trunk of small tree 3 ft. from ground, in swampy Mora forest, 368 ; stem sapling, 3 ft. from ground in wet forest, 797.

Distr. W. Indies, Florida and Mexico to Uruguay.

Microsorium (Anapeltis) surinamense (*Jacq.*) *Alston*, comb. nov.—*Polypodium surinamense* Jacq. Coll. iii. 85, t. 21, fig. 3 (1798). *P. lycopodioides* var. *surinamensis* Kl. in Linnaea xx. 403 (1847).

On fallen tree in dark forest, 50 ; mossy branches near top of tall forest tree, 75.

Distr. French Guiana, Surinam and Brazil.

M. (Anapeltis) Thurnii (*Bak.*) *Alston*, comb. nov.—*Polypodium Thurnii* Bak. in Ann. Bot. v. 476 (1891).

Trunk of tree 10 ft. up, in swamp forest, 256.

Distr. French Guiana and Surinam.

M. (Microgramma) persicariaefolium (*Schrad.*) *Alston*, comb. nov.—*Polypodium persicariaefolium* Schrad. in Goett. Gel. Anz. 867 (1824). *Microgramma persicariaefolia* Presl, Tent. 214, t. 9, fig. 7 (1836).

Near first falls on Cuyuni River, creeping on upper side of boughs of small tree overhanging river, 851.

Distr. Brazil, French Guiana and Surinam.

Copeland, in his review of *Microsorium* (Univ. Calif. Publ. xvi. 111–113, 1929), makes no mention of *Anapeltis* J. Sm. or *Microgramma* Presl. Hence it is possible that he considered that they should be regarded as distinct genera.

Marginaria ciliata (*Willd.*) *Alston*, comb. nov.—*Polypodium ciliatum* Willd. Sp. Pl. v. 144 (1810).

On trunk of tree in wet place in Mora forest, 370.

Distr. Costa Rica and Trinidad to Bolivia and Brazil.

Tidestrom (in Torreya, v. 171) retains the genus *Marginaria*, but Copeland makes no mention of it. Christensen, however, states that "it is very probable that the genus *Lepicystis*, as defined by Diels [i.e., *Marginaria*], is a natural one." (Dansk Bot. Ark. v. 22, p. 6).

M. tecta (*Klf.*) *Alston*, comb. nov.—*Polypodium tectum* Klf. Enum. 87 (1824).

Upper branches of Baromalli tree, 221 ; upper branches of Futui tree, 344.

Distr. Colombia to Peru and South Brazil.

Elaphoglossum Herminieri (*Bory & Fée*) *Moore.*

Trunk of Dakamaballi tree in fork among moss, 92 ft. from ground Morabukea forest, 816.

Distr. Guatemala, W. Indies, French Guiana and Surinam.

E. rigidum (*Aubl.*) *Urban* in Symb. Ant. ix. 375 (1925) pro parte.—*Polypodium rigidum* Aubl. Pl. Gui. ii. 963 (1775). *Acrostichum flaccidum* Fée, Acrost. xxxiii. t. 7 (1845). *Elaphoglossum flaccidum* Moore, Ind. Fil. 356 (1862).

Trunk of fallen tree in swamp forest near creek, 29 ; trunk of small tree, 2 ft. from ground, in well-lit, sandy Mora forest, 600.

Distr. W. Indies and French Guiana.

Aublet's type in Herb. Mus. Brit. belongs to this species and not to *E. longifolium* J. Sm.

Elaphoglossum glabellum *J. Sm.*

Upper mossy branches of tall forest trees, 74.

Distr. W. Indies and Colombia to Bolivia and Brazil.

E. pteropus *C. Chr.*

On tree in moist forest, 143 ; on tree in sandy swampy forest, 282.

Distr. W. Indies and French Guiana.

Schizaeaceae.

Schizaea fluminensis *Miers ex Sturm*, Fl. Bras. i. pt. 2, 184, t. 15, f. 2 (1859).—*Lophidium fluminense* Und. in North Am. Fl. xvi. 38 (1909).

On thick carpet of dead leaves in deep shade in Morabukea forest, 257 ; on thick carpet of dead leaves with saprophytes in Morabukea forest, 333.

Distr. French Guiana and Brazil.

Lygodium micans *Sturm* in Mart. Fl. Bras. i. pt. 2, 178 (1859).—*L. volubile* Posth. Ferns Surinam, 162 (1928) pp. non Sw.

Rather light places by stream, gregarious, 20A ; forming dead masses on trees on river bank to 25 ft. on island in Cuyuni River, near Lower Camaria landing, 818.

Distr. Trinidad (*Fendler* 31 !).

Marattiaceae.

Danaea simplicifolia *Rudge.*

On loamy soil, 332 ; wet herby slopes of gully in Wallaba forest, 352.

Distr. French Guiana, Surinam and Brazil.

D. elliptica *Sm.*

Muddy ground in Mora forest by small black-water creek, 703; stony and muddy ground by small stream, also on damp slopes near by, 751.

Distr. Mexico and W. Indies to Brazil.

LYCOPODIACEAE.

Lycopodium dichotomum *Jacq.*

Near first falls on Cuyuni River, about 10 ft. from ground among moss on fallen tree in Mora forest, 844.

Distr. Mexico and W. Indies to Guiana (fide Underwood & Lloyd in Bull. Torr. Bot. Club. xxxiii. 111).

L. cernuum *Linn.*

Small clearing in low bush, 401.

Distr. Pantropic.

SELAGINELLACEAE.

Selaginella affinis *A. Br.* (? *S. rigida* Linden).

Under bushes in second growth forming dense herbage, 841.

Distr. French Guiana.

S. producta *Bak.*

Small clearing in fairly open sandy forest, 196; mossy bog near creek, 268.

Distr. Venezuela, Brazil and Trinidad.

S. dendricola *Jenm.*

Wet sandy bank of stream in very deep shade, scarce, 19.

Distr. Endemic.

S. Parkeri (*Hk. & Gr.*) *Spring.*

Rotting log in Morabukea forest, frequent, 14, 78.

Distr. French Guiana.

XLIII.—DECADES KEWENSES. PLANTARUM NOVARUM IN HERBARIO HORTI REGII CONSERVATARUM. DECAS CXXVIII.

1271. **Mouriria Marshallii** *Burtt Davy et Sandwith* [Melastomaceae-Memecyleae]; *M. acutiflorae* Naud. affinis, pedicellis basi ipsa tantum articulatis, corolla ante expansionem petalorum late ovoideo-acuminata, connectivo antherarum multo longius calcarato, calcari loculis longiore differt.

Arbor excelsa usque 30 m. alta, ramulis annotinis cinereis corrugulatis glabris, hornotinis olivaceis usque rubescentibus fere laevibus glabris, internodiis 1–4 cm. longis, *Folia* lanceolata, rarius ovato-lanceolata vel elliptica, apice conspicue acuminata, basi cuneata attenuata vel obtusa, 6–11·5 cm. longa, 2–5·5 cm. lata, chartacea, glabra, costa supra valde impressa subtus prominente, nervis lateralibus circiter 10–12 utrinque subaequaliter satis immersis

distinctis sed haud conspicuis patulis marginem versus anastomosantibus ; petiolus glaber, 4–6 mm. longus, 1–1·5 mm. diametro. *Inflorescentiae* in ramis annotinis axillares, umbellato-cymosae, vulgo 3–6-florae, glabrae ; pedunculus brevissimus, 1–3 mm. longus vel subnullus ; bracteae bracteolaeque delapsae ; pedicelli costato-striati, flexuosi, 0·8–1·5 cm. longi, basi ipsa articulati ibique ut videtur bracteolati. *Calyx* late turbinatus, tubo 3–4 mm. longo extra minute lepidoto basi haud gibboso, ore ad 7·5 mm. lato subtruncato lobis vel dentibus triangularibus ad 1 mm. longis atque latis demum sinuato-reflexo. *Corolla* matura nondum expansa late ovoideo-acuminata, ad 8·5 mm. longa, basi ad 7 mm. lata, glabra nec extra furfuraceo-tomentella ; petala 5, siccitate lutea, ovato-acuminata, matura fere ad 9 mm. longa, ad 6 mm. lata. *Stamina* filamentis apicem versus attenuatis ad 7·5 mm. longis ; antherae loculis vix ad 2 mm. longis, dorso glandula oblonga 0·7 mm. longa instructae, connectivo postice conspicue circiter 3 mm. calcarato. *Ovarium* biloculare, vertice depresso radiato-costato atque margine lobato, stylo 1·5 cm. longo ; ovula 6. *Bacca* globosa, ad 2 cm. diametro, monosperma.

Trinidad. New Grant, July 1931, *F. R. Andrews* in Herb. Trin. 12575 (type in Kew Herb. and in Herb. Imp. Forestry Institute, Oxford). North Trace, Victoria, June 1930, *R. C. Marshall* and *C. Swabey* in Herb. Trin. 12385. Without locality, Aug. 1876, *Prestoe* in Herb. Kew. Without locality, July 1930, *R. C. Marshall* in Herb. Imp. Forestry Institute, Oxford, 27437.

Vernacular name, " Bois Lisette."

" A big tree, reaching a height in the neighbourhood of 100 ft., with a girth of 8 ft. or so. The wood is yellowish, with a curious white streak, almost as if it were attacked by fungus ; there is no doubt, however, that the streak is not due to fungus, it is typical of the species."—*Marshall.*

1272. **Isotoma anethifolia** *Summerhayes* [Lobeliaceae] ; affinis *I. axillari* Lindl. a qua foliis angustioribus segmentis longioribus, floribus albis, corollae lobis anterioribus oblanceolatis latioribus, tubo circiter 1·4 cm. longo differt.

Herba ? perennis, erecta, usque 50 cm. alta, fere glabra. *Caules* multi, satis ramosi, teretes. *Folia* alterna, pinnatipartita, ambitu elliptico-lanceolata, usque 8 cm. longa, parte media indivisa usque 2 mm. lata, segmentis valde inaequalibus, longioribus utrinsecus 3–4 distantibus linearibus usque 2 cm. longis et 1·5 mm. latis brevioribus usque dentiformibus basin versus interdum dente brevi instructis. *Flores* ex axillis foliorum superiorum orti ; pedicelli suberecti, usque 15 cm. longi. *Sepala* lineari-subulata, acuta, recurvata, 6–7 mm. longa, basi 1·5 mm. lata, inferne anguste alata. *Corolla* alba ; tubus cylindricus, medio leviter constrictus, 1·3–1·5 cm. longus, 3 mm. diametro ; lobi 2 posteriores oblongo-elliptici, acute acuminati, 1·2–1·5 cm. longi, 4–5 mm. lati, 3 anteriores oblanceolati, cuspidato-apiculati, 1·3–1·6 cm. longi, 6–9 mm. lati, intermedio basi callis

duobus semicircularibus instructo. *Antherae* pubescentes, 2 inferiores apice seta singula recta instructae. *Stylus* inferne pubescens, superne glaber; stigma apice dilatatum, bilabiatum, annulo pilorum instructum; ovarium obconicum, circiter 5 mm. longum. *Capsula* obconica vel cylindrico-obconica, circiter 1 cm. longa; semina nigra, oblongo-cylindrica, 0·7 mm. longa.

QUEENSLAND: Stanthorpe, in crevices of granite rocks in open forest on an exposed mountain top, 990 m., March 1930, *Hubbard* 5693 (type); flowered at Royal Botanic Gardens, Kew, in June 1932, from seed of same.

NEW SOUTH WALES: near Tenterfield, *C. Stuart*.

Flowers white, with faint mauve line down centre of anterior petal lobes. Calli at base of median anterior lobe bright green.

This species was included by Bentham under *I. axillaris* Lindl. in Flora Australiensis, but is easily distinguished by the characters given in the diagnosis. It is known at present only from the neighbourhood of the New South Wales–Queensland border as the two localities given show, but it may also occur farther south in New England.

1273. **Pasania craterophora** *C. E. C. Fischer* [Fagaceae]; ab omnibus congeneribus cupulis magnis crateriformibus, marginibus expansis vel recurvis differt.

Arbor excelsa. *Ramuli* brunnei vel pallide brunnei, glabri, lenticellis verruculosi; innovationes velutino-pubescentes. *Folia* rigide chartacea vel subcoriacea, oblonga, apice rotundata vel emarginata, abrupte cuspidata, basi rotundata vel brevissime cuneata, saepe subinaequilateralia, glabra, 14–35 cm. longa, 9–17 cm. lata, marginibus integris subrevolutis, costa cum nervis primariis 10–12-jugis regularibus distantibus infra prominente, secundariis inconspicuis inter primarios scalariformibus; petioli robusti, glabri, rugulosi, sicci nigri, 1–2 cm. longi. *Inflorescentia* terminalis, simplex vel ramosa, unisexualis vel spicis inferioribus ♂ superioribus ♀, nonnullis saepe inferne ♀ apicem versus ♂. *Spicae* erectae vel erecto-patentes, rhachide furfuraceo-puberula, sulcata, ♂ graciles, rectae, 8–24 cm. longae, floribus aggregatis regulariter vel interrupte dispositis; spicae ♀ (vel spicarum polygamarum partes ♀) robustae, 12–32 cm. longae, floribus solitariis raro binis. *Flos mas* 2·5 mm. diametro; perianthii lobi 6, triangulari-lanceolati, 1 mm. longi, puberuli; stamina 15, filamentis gracilibus usque 3·5 mm. longis; pistillodium hemisphaericum, velutinum. *Flos femineus* 3 mm. longus, basi bracteis numerosis minutis ligulatis brunneo-puberulis circumdatus; perianthii lobi 6–7, triangulares, intus dense albo-hirti; styli 3, nonnunquam 4, 1 mm. longi, fere erecti, subtrigoni; ovarium albo-hirtum, 2–4- (plerumque 3-) loculare. *Pedunculus fructifer* robustissimus, valde curvatus (an semper?). *Fructus* congesti sed haud coalescentes. *Cupula* lignosa, crateriformis, marginibus valde revolutis saepe faciei exteriori cupulae adpressis atque sic lateraliter

Pasania crateropbora C. E. C. Fischer. 1, Leaf × $\frac{5}{6}$; 2, Male flower × 8; 3, Female flower × 5; 4, Infructescence × $\frac{5}{6}$; 5, Cupule and fruit × $\frac{5}{6}$; 6, Fruit × $\frac{5}{6}$.

compressis ut plicae 5–7 radiantes fiant, 4·3–5·5 cm. diametro, 1·8–2·5 cm. alta, extra fere laevis, inconspicue pluriannulata, annulis circiter 7 irregularibus leviter elevatis, undique pubescens, intus basi valde umbonata ; pedicelli robusti, 3–4 mm. longi. *Glans* a cupula libera, circiter duas partes exserta, late oblonga, 2·6–2·9 cm. longa, 2·1–2·6 cm. lata, apice rotundata, breviter apiculata, basi alte excavata, in umbone intracupulari sessilis, apice leviter puberulo excepto glabra, pericarpio lignoso 3–5 mm. crasso.

Malay Peninsula. Pahang : Ulu Pahang, 200–300 ft., *H. Ritchings* (type).

A tall buttressed tree, 60–70 ft. high and 5 ft. in girth $3\frac{1}{2}$ feet above ground level (immediately above the buttresses). The vernacular name " Berengan " is applied to all species of *Pasania* and *Quercus* in the region.

1274. **Eria (§ Xiphosium) Hindei** *Summerhayes* [Orchidaceae-Kerosphaereae] ; ab *E. carinata* Gibson et *E. rosea* Lindl. floribus multo minoribus extra sparse pubescentibus, labello fere simplici facile distinguenda.

Herba epiphytica, rhizomate repente. *Pseudobulbi* 1–2 cm. distantes, ovoidei vel elongato-ovoidei, 2–4 cm. longi, 1–1·5 cm. diametro, apice monophylli, cataphyllis 5–8 acutis membranaceis vaginantibus vestiti. *Folia* vernatione conduplicata, oblongo-linearia, apice breviter inaequaliter acute bilobulata, 13–17 cm. longa, 1·7–2·7 cm. lata, coriacea, basi in petiolum circiter 2–4 cm. longum angustata. *Inflorescentiae* ex axillis cataphyllorum superiorum ortae, erectae, 4–8 cm. longae, laxe multiflorae ; rhachis teres, pubescens ; bracteae ovatae vel lanceolato-ovatae, acutae, fere glabrae, 3–4 mm. longae, ovarium pedicellatum superantes. *Flores* patentes, ovario pedicellato breviter pubescente. *Sepalum intermedium* oblongo-lanceolatum, obtusum, 5 mm. longum, 2 mm. latum ; sepala lateralia oblique et leviter falcatim lanceolata, obtusa, 5·5–6 mm. longa, juxta basin 2·5–3 mm. lata ; omnia sepala extra sparse breviter pubescentia, ciliata. *Petala* anguste oblonga, obtusa vel subacuta, 5 mm. longa, 1·5 mm. lata, margine minute denticulata, glabra. *Labellum* sessile, recurvatum, simplex vel obscure trilobum, ambitu ovatum, subacutum, medio concavum, 4 mm. longum, 3 mm. latum, lobulis lateralibus rotundatis ab intermedio vix sejunctis, lobo intermedio triangulari carnoso, labellum in disco callis duobus lateralibus lanceolatis apice liberis acutis et linea media incrassata instructum. *Columna* 1 mm. longa, pede fere 2 mm. longo ; anthera obtusa.

Assam. Locality not known, communicated in 1926 by Mr. G. L. Hinde and flowered at the Royal Botanic Gardens, Kew, in 1928 and succeeding years.

Sepals and petals pinkish-buff with darker stripes. Lip dull pink, paler towards edges. Column as sepals ; pollinia bright yellow.

A striking, small-flowered species of sect. *Xiphosium* which resembles *E. rosea* Lindl. extremely closely in vegetative features,

except for the rather narrower leaves, but which is totally different in the flowers. These have the appearance of sect. *Hymeneria*, the rhachis and pedicels being pubescent while the sepals are sparsely so. In my opinion *E. clausa* King & Pantling is incorrectly placed in sect. *Xiphosium* by Kraenzlin and is more at home in sect. *Hymeneria*. The sub-section *Convolutae* of sect. *Xiphosium* in Kraenzlin's monograph is best treated as a distinct section as already done by Schlechter and J. J. Smith.

1275. **Cyperus (§ Luzuloidei) Altsoni** *Kükenthal* [Cyperaceae-Cyperinae] ; affinis *C. Hieronymi* Boeck., a qua bracteis tantum 4–5, spiculis oblongo-cylindraceis 20–30 mm. longis 5 mm. latis usque ad 50-floris, necnon squamis multo longioribus stramineis obtusiusculis differt.

Rhizoma abbreviatum, lignosum. *Culmus* 25–30 cm. altus, robustus, triqueter, apice scabriusculus, basi plurifoliatus. *Folia* culmum superantia, 12 mm. lata, plana, nervis 3 prominentibus percursa, marginibus scabra, basin versus attenuata, apice longe acuminata ; vaginae longae, durae, purpureae. *Bracteae* 4–5, inferiores anthelam longe superantes. *Anthela* semicomposita, diffusa, 6–8-radiata ; radii divergentes, rigidi, usque 8 cm. longi, partim indivisi, partim apice 2–5-ramulosi ; radioli breves, 1 cm. longi, vel subsessiles, ex ocreis longis purpureis postice biaristatis exsurgentes. *Spiculae* 3–6-natim digitatae, compressae, oblongo-cylindricae, 2–3 cm. longae, 5 mm. latae, dense multi- (usque 50-) florae. *Rhachilla* rigida, exalata. *Squamae* dense imbricatae, majusculae, fere 5 mm. longae, lanceolato-ovatae, obtusiusculae, valde carinatae, in dorso laete viridi trinervi scabrae, lateribus stramineis obsolete striatis celluloso-reticulatis. *Nux* parvula, quartam partem squamae aequans, late ovalis, trigona, breviter pedicellata, apiculata, atro-brunnea, dense punctulata. *Stamen* 1 ; filamentum dilatum. *Stylus* et *stigmata* 3 mm. longa.

British Guiana. Maicwac River, Kopinang River, by riverside in sand, 480 m., April 1926, *Altson* 492 (type).

1276. **Cyperus (§ Pulchrae) subtenax** *Kükenthal* [Cyperaceae-Cyperinae] ; affinis *C. tenaci* Boeck., sed rhizomate elongato crasso, culmis acute triangularibus (nec obsolete trigonis), anthela capitata globosa et nux lineari-oblonga (nunquam obovato-oblonga) differt.

Rhizoma elongatum, lignosum, crassum. *Culmi* approximati, 20–40 cm. alti, graciles, stricti, acute triangulares, laeves, basi vaginis duris integris brunneis vestiti. *Folia* pauca, dimidiam partem culmi aequantia, rigida, canaliculata vel complicata, angusta. *Bracteae* 2, haud longae, pungentes, ima culmum quasi continuans. *Anthela* capitata, e spicis pluribus confluentibus sessilibus formata, globosa, 8–10 mm. diametro. *Spiculae* multae, lineares, 5–6 mm. longae, 1 mm. latae, subcompressae, usque 20-florae. *Rhachilla* tenuis, exalta. *Squamae* subdense imbricatae, apice patulae, chartaceae, oblongo-ovatae, obtusae, lateribus sanguineae, e dorso

stramineo-viridi trinervi breviter mucronatae. *Nux* squamam subaequans, lineari-oblonga, trigona. *Stylus* brevis. *Stigmata* 3.

Angola : Benguella, country of the Ganguellas and Ambuellas, Kassungo, 18 Oct. 1906, *Gossweiler* 3270 (type in Kew Herb. and in Brit. Mus. Herb.).

1277. **Isachne Meeboldii** *C. E. C. Fischer* [Gramineae-Paniceae] ; *I. albenti* Trin. proxima, sed foliis multo longioribus pilis basi bulbosis, spiculis majoribus, glumarum setis basi bulbosis differt.

Herba perennis, caespitosa ; innovationes intravaginales. *Caules* fere a basi ramosi, erecti, rigidi, glabri, usque 70 cm. alti ; nodi inferiores inflati, sub inflatione constricti et colore fusciores ; internodia 4–11·5 cm. longa. *Folia* caulem usque ad inflorescentiam induentia ; vaginae laxae, inferiores saepe internodio longiores, glabrae, pilis rigidis basi bulbosis ciliatae ; ligulae ad lineam pilorum rigidorum redactae ; laminae (externe a vaginis aegre distinguendae) lineares, dimidio superiore in apicem acutum vel acuminatum augustatae, 15–30 cm. longae, 0·5–1 cm. latae, multicostatae, costa media infra glabra prominente, costis utraque pagina pilis brevibus vel longiusculis basi bulbosis plus minus vestitis, marginibus incrassatis cartilagineis scabris. *Paniculae* pyramidales, demum effusae, usque 13 cm. longae ; rhachis gracilis, sulcata, glabra ; rami quaquaversi, erecto-patentes, filiformes, glabri, usque 22 cm. longi, angulati ; pedicelli solitarii, capillares, apice leviter ampliati. *Spiculae* globosae, 2·5 mm. longae. *Glumae* membranaceae, subaequales, suborbiculares, concavae, obtusae, indistincte 7-nerviae, exceptis setis paucis basi bulbosis in dimidio superiore sitis glabrae, 2·2–2·5 mm. longae, superiore quam inferiore paullo minore, stramineae vel plus minus purpureae. *Flosculi* 2, hermaphroditi, subaequales, hemisphaerici. *Lemmata* coriacea, orbicularia, 1·5–1·8 mm. longa, superiore quam inferiore subminore, marginibus involuta, extra puberula, pallide straminea, apice saepe purpurea vel nigra. *Paleae* coriaceae, marginibus incurvis hyalinis, parte inoperta extra puberula. *Caryopsis* non visa.

South India. Mysore : Shimoga, 2000–3000 ft., Oct., *A. Meebold* 10,747 (type), 10,746 ; Kumsi, 2000–3000 ft., Oct., *A. Meebold* 10,745 : "in rice fields, stiffly erect." (Duplicates of all 3 numbers are in Calc. Herb.)

1278. **Isachne Angladei** *C. E. C. Fischer* [Gramineae-Paniceae] ; *I. himalaicae* Hook. fil. proxima, sed caulibus scandentibus, foliorum nervis paucioribus, marginibus haud incrassatis, pilis ligularibus multo brevioribus, spiculis glumis lemmatibus anguste ellipticis differt.

Suffrutex ramosissimus, scandens, ultra 1·2 m. longus (longitudine maxima ignota). *Caules* graciles, bambusiformes, glabri, tota longitudine foliosi ; nodi tumidi, internodiis 1·8–11·5 cm. longis. *Foliorum vaginae* primum involutae, arcte clausae, dein laxae, plerumque internodiis multo breviores, interdum longiores, glabrae,

marginibus ciliatae, ad furcationes facile fractae atque deciduae ; ligula e pilis brevibus rigidis sistens ; laminae rigidiusculae, angustissime lineari-lanceolatae, acuminatae, basi rotundatae atque plus minus ciliatae, 5–15 cm. longae, 3–6 mm. latae, 7–9-costatae, glabrae, marginibus minute scaberulae. *Paniculae* pyramidales, effusae, 6–8 cm. longae, glabrae ; rhachis gracilis, sulcata ; rami quaquaversi, capillares, nodis tumidis et nonnunquam minute puberulis ; pedicelli solitarii, capillares, apice levissime ampliati. *Spiculae* anguste elliptico-obovatae, 2·4 mm. longae. *Glumae* membranaceae, subaequales, late ovato-ellipticae, acutae vel subacutae, 2–2·4 mm. longae, concavae, 7-nerviae, glabrae vel minutissime puberulae cum setis paucis prope apicem e basibus plus minus bulbosis, pallide stramineae vel plus minus purpurascentes. *Flosculi* 2, hermaphroditi. *Lemmata* crustacea, subaequalia, anguste elliptica, naviculiformia, obtusa, 2 mm. longa, marginibus involuta, pallide straminea, apice saepe fusco-purpurea, lemmate superiore quam inferiore subminore plus minus stipitato. *Paleae* crustaceae, extra puberulae, marginibus valde incurvatis. *Stamina* 3, multum ante pistillum maturescentia, mox caduca vestigio vix ullo relicto ; filamenta tenuissima. *Stigmata* e latere flosculi paullo supra medium exserta. *Caryopsis* non visa.

South India. Palni Hills, Shembaganur, 6000 ft., *L. Anglade* 914 (type) ; 5500 ft., *van Malderen* 1283 ; without precise locality, *A. Saulière* 647 ; Anaimallai Hills, *R. H. Beddome* ; High Wavy Mountains, 4000–5500 ft., May, *E. Blatter & Hallberg* 182.

1279. **Isachne Bourneorum** *C.E.C.Fischer* [Gramineae-Paniceae] ; *I. Kunthianae* Nees proxima, sed major, foliis linearibus vel linearilanceolatis basi angustatis caulem haud amplectentibus, vaginis laminisque glabris vel puberulis, glumis longioribus.

Herba erecta. *Caulis* decumbens, basi radicans, 0·1–1 m. altus. *Foliorum* vaginae costatae, glabrae vel pilis brevibus paucissimis praeditae, pilis longis ciliatae ; ligula e serie pilorum rigidorum sistens ; laminae lineares usque lineari-lanceolatae, rarissime ovatae, acutae vel acuminatae, 1·5–6·5 cm. longae, 3·7–11·2 mm. latae, regulariter 7-costatae, costa media haud prominente, glabrae vel pilis brevibus paucissimis praeditae, marginibus cartilagineis scaberulis basi saepe ciliis paucis basi bulbosis praeditis. *Panicula* pyramidalis, 3·7–7·5 cm. longa ; rhachis et ramificationes graciles, canaliculatae, glabrae vel scaberulae, furcationibus plerumque pubescentibus ; rami erecto-patentes vel fere horizontales, usque 4·5 cm. longi. *Spiculae* pedicellatae, anguste ellipticae. *Glumae* membranaceae, subaequales, lanceolatae, cuspidato-acuminatae, 5–7-nerviae, glabrae vel saepius dimidio superiore setis paucis basi bulbosis praeditae, 2·5–4 mm. longae. *Flosculi* 2, hermaphroditi. *Lemmata* dissimilia ; inferius membranaceum, anguste elliptico-oblongum, concavum, obtusum, multinervium, marginibus subrevolutum, glabrum, 2–2·5 mm. longum, palea ejus simili marginibus valde incurvis ; superius subcoriaceum, late

ellipticum, concavum vel hemisphaericum, nervis indistinctis, papillosum vel puberulum, marginibus leviter involutum, 1·2–1·8 mm. longum, palea plana marginibus valde incurvis. *Lodiculae* latae. *Stamina* 3, linearia, paleae fere aequilonga. *Caryopsis* non visa.

South India. Palni Hills: Kodaikanal, 6500 ft., *Sir A. G. and Lady Bourne* 2491 (type); Silver Cascade riverside, Gundon Shola, Church Cliff path, Bear Shola Valley, *Sir A. G. and Lady Bourne* 1041, 1249, 1280, 1481; without precise locality, *Wight* 3380; Pumbarai, *Madras Herbarium* 16,599; Bear Shola, *K. C. Jacob*, 16,171. Nilgiri Hills: Kolakanibai, 5000 ft., *J. S. Gamble* 16,786; Terrace, 5000 ft., *J. S. Gamble*, 18,309; Naduvattam, 6000 ft., *M. A. Lawson* 4; Pykara, 7000 ft., *A. Meebold* 11,635; Gudalur Ghat woods, *Madras Herbarium* (without number or collector's name). Baba budan Hills: Kalhatti, 6000 ft., *A. Meebold* 9421.

1280. **Pogonarthria Brainii** *Stent* [Gramineae-Eragrosteae]; affinis *P. squarrosae* Pilger, sed spiculis minoribus, glumis lemmatibusque acutis, his latioribus differt.

Gramen perenne, caespitosum. *Culmi* rigide erecti, ad 1·3 m. alti, graciles, teretes, glabri, circiter 3–4-nodes, nodis atro-purpureis, internodio supremo (pedunculo) circiter duas partes culmi aequantes. *Foliorum* vaginae superiores arcte appressae, laeves, glabrae, tenuiter striatae, rigidiusculae, internodiis breviores; vaginae inferiores solutae, plus minusve appresse pubescentes vel glabrescentes; ligulae brevissimae, membranaceae, minute ciliolatae; laminae anguste lineares, ad apicem setaceum attenuatae, ad 20 cm. longae, involutae, basi 2 mm. latae, rigidae, superiores plerumque glabrae, inferiores sparse pilosae vel glabrescentes, supra scaberulae, subtus laeves. *Panicula* linearis, contracta, stricta, 13–20 cm. longa, 1·5 cm. lata; rhachis glabra, laevis, obscure 4-angulata; rami solitarii vel saepe 2–4-approximati, flexuosi, gracillimi, subtriquetri, glabri, laeves, dense spiculati parte basali nuda 3–5 mm. longa excepta. *Spiculae* secundae, biseriatae, breviter pedicellatae, ovato- vel elliptico-oblongae, circiter 3·5 mm. longae, valde lateraliter compressae, glabrae, viridulae et purpureo-variegatae, 3–4-florae, flore supremo plus minusve redacto; rhachilla supra glumas et inter lemmata articulata, scaberula, apice articulorum pilis brevibus paucis orta. *Glumae* inaequales, ovatae, acutae, uninerviae, valde carinatae, carinis scaberulis; inferior 1·5 mm. longa; superior 2 mm. longa. *Lemmata* e glumis exserta, ambitu late lanceolata vel anguste ovata, acuta, 2·3–2·5 mm. longa, valde carinata, trinervia, nervis lateralibus tenuissimis saepe obscuris plus minusve percurrentibus; paleae lemmatibus paulo breviores, membranaceae, apice hyalinae, carinis scabridis. *Lodiculae* brevissimae, cuneatae, tenuiter subtrinerviae. *Antherae* purpureae, 1·3 mm. longae. *Ovarium* late ovatum vel globosum.

Southern Rhodesia: Salisbury; granite sand veld, 9 miles off Beatrice Road, *Brain in Govt. Herb. Salisbury* 3621 (type); Stone

Ridge Farm, *Fitt* 7. Nyamandhlovu District; Umgusa Spur, *Pardy in Govt. Herb. Salisbury* 3740.

XLIV.—NEW SOUTH AFRICAN IRIDACEAE. L. Bolus.

Homeria odorata *L. Bolus*; a *H. salmonea* L. Bolus floribus odoratis vespertinis sordide pallideque luteis, perianthii "tubo" infundibuliformi, stylo breviore, praecipue differt.

Planta saepius 40–62 cm. alta. *Cormus* globosus, 2·2 cm. diam., tunicis saturate brunneis sat tenuibus. *Vaginae* basales papyraceae, subtruncatae, ad 6 cm. longae. *Folium* productum 1, basale, textura firma, apice leviter induratum, pluri-nervatum, 30–53 cm. longum sine vagina clausa ad 22 cm. longa, 1–2·5 cm. latum, caule ad per 33 cm. exserto, ad 4 mm. diam.; folia spathiformia 2–5, membranacea, longe setaceo-acuminata, ad 5·5 cm. longa, cymas 2–4 in axillo ferentia. *Cymae* interdum fere patentes, saepius ad 6-florae, floribus pomeridianis vel vespertinis. *Spathae valvae* superne membranaceae, exteriores 2·5–4 cm., interiores 4–5·5 cm. longae. *Sepala* obtusa, 2–2·5 cm. longa, ad 1·1 cm. lata, in unquem 4 mm. longum gradatim attenuata, genu laete luteo; petala ad 8 mm. lata, ungue 6 mm. longo. *Tubus* staminalis 5 mm. longus; antherae 3 mm. longae, styli ramos 1 mm. longos superantes. *Ovarium* 4–6 mm. longum. *Capsula* saepe irregulariter maculate notata, ad 1 cm. longa, ad 5 mm. diam.

Calvinia Div.; in clay at the "klip koppies," near Nieuwoudtville, Sept. 1930, *L. Bolus* (Bolus Herbarium, no. 19,968).

Hexaglottis nana *L. Bolus*; a ceteris habitu nano, cormo magno, folio producto solitario, praecipue differt.

Planta sat robusta, 10–17 cm. alta, parte infra folium ad 9 cm. longa. *Cormus* globosus, 3 cm. diam., reliquis fibrosis copiose coronatus, tunicis permultis saturate brunneis inferne interdum lamellatis superne pinnate reticulatis demum e nervis omnino compositis apice longe aristatis. *Folium* basi inflorescentiae positum, suberectum vel patens, flexuosum, textura firma, parte apicale haud visa, ad 25 cm. longum, basi ad 8 mm. medio 6 mm. latum, cum foliis spathiformibus 2–3 apice callosis 10–4 cm. longis basi ad 1·1 cm. latis subrigide papillate ciliolatum. *Cymae* 2–3-florae. *Spathae valvae* herbaceae, obtusae vel subtruncatae, nunc subaequilongae, nunc exterior longior, nunc parum brevior, 2·3–4·6 cm., interior 3–3·7 cm. longa, apice laceratae. *Perianthium* luteum, segmentis basi, ut videtur in siccis, breviter connatis ad 1·8 cm. longis. *Antherae* ad 5 mm. longae. *Stylus* 3 mm. longus, ramis 4–5 mm. *Ovarium* demum exsertum, 4–5 mm. longum.

Clanwilliam Div.; Algeria Forest Station, Cedarberg, Sept. 1930, *Dora Weintroub* (Bolus Herbarium, no. 19,972).

Watsonia (Euwatsonia) Ryderae *L. Bolus*; a *W. iridifolia* Ker. foliis latioribus subglaucis, bracteis acuminatis ab axi divergentibus, bracteolis bracteis brevioribus, differt.

Planta robusta, ad 1·28 m. alta. *Cormus* cum pluribus novellis arte adpressis ad 8 cm. diam., tunicis crassis intricate cancellatis. *Caulis* omnino vaginis vestitus vel apice parum exsertus, ad 1·2 cm. diam. *Folia* basalia 8–9, artissime equitantia, vaginis intus copiose mucilaginis, acuminata, nervo medio marginibusque inconspicuis, nervis intermediis crebris in vivis vix visis, 47–67 cm. longa, prope medium latissima, ad 5·8 cm. lata, caulina reducta 3–4, 30–11 cm. longa, laminis 10–0 cm. longis, vaginis haud ventricosis compresse carinatis. *Inflorescentia* simplex, ad 37-flora, vel demum 1–3 ramis evolutis et ad 9-floris, floribus fere erectis. *Bracteae* saturate brunneae, internodia bene superantes, 4–1·5 cm.l ongae; bracteolae 3–1·2 cm. longae, omnino coalitae vel demum ad per 6 mm. apice liberae. *Perianthium* roseum vel subpurpureum, 5–6 cm. longum, tubo diu fere stricto, 2·8–3·7 cm. parte cylindrica 2–2·5 cm. longo, apice ad 6 mm. diam.; segmenta obovato-oblonga, obtusa, exteriora ad 0·8 cm., interiora ad 1·1 cm. lata. *Stamina* arcuata, saepe ad apicem segmentorum attingentia, antheris purpureis ad 1·1 cm. longis, polline caeruleo. *Styli rami* 6 mm. longi; stigmata 6, 2 mm. longa; ovarium inferne leviter angustatum, 4 mm. longum.

Riversdale Div.; Garcia's Pass, Nov.-Dec. 1931, *Eleanor Ryder* (Bolus Herbarium, no. 19,974).

Watsonia (Neuberia ?) Emiliae *L. Bolus*; a *W. Middlemostii* L. Bolus folio producto basali solitario, floribus fere erectis, tubo perianthii longiore angustioreque, fere in modo tubi in sectione *Euwatsonia*, differt.

Planta 50–74 cm. alta, inter graciliores generis. *Cormus* ad 2·5 cm. diam., tunicis tenuibus arte intertextis vel senectissimis derumpentibus. *Caulis* subcompressus, inferne anguste 2-alatus, ad 6 mm., apice 3 mm., diam., internodiis 2·5–20 cm. longis, bene exsertis. *Folia* 5, basali ad 65 cm. longo, lamina 60 cm. longa, ad 5 mm. lata, caulina 65–5 cm., lamina 44–0 cm. longa, ad 7 mm. lata, viridia, marginibus subluteis vix incrassatis, nervo medio sat conspicuo, nervis intermediis crebris, in vivo vix visis. *Inflorescentia* 2-ramosa spica, terminali 9–11-flora, ramis erectis 2–3-floris. *Bracteae* saturate brunneae, chartaceae, acuminatae, 1·5–1 cm. longae, internodiis subaequilongae; bracteolae 1·1–1 cm. longae, parte libera 1–4 mm. longa. *Perianthium* roseum, ad 4 cm. longum, tubo subinfundibuliformi ad 2·2 cm. longo apice 6 mm. diam.; segmenta obovato-oblonga, obtusa, basi alba, inferne saturate vittata, supremum evittatum, latissimum, exteriora ad 7 mm., interiora 8–9 mm., lata. *Stamina* arcuata, ad dimidium segmentorum vel infra attingentia, filamentis inclusis vel breviter exsertis, antheris purpureis ad 9 mm. longis. *Styli rami* apicem antherarum vix attingentes, ad 4 mm. longi; stigmata 6, 1–1·5 mm. longa; ovarium 2–3 mm. longum.

Riversdale Div.; Garcia's Pass, Nov.-Dec. 1931, *Emily Ferguson* (Bolus Herbarium, no. 19,975).

Watsonia (Neuberia) pauciflora *L. Bolus*; a *W. Middlemostii* L. Bolus foliis paucioribus angustioribus, bracteis latioribus, floribus erectioribus, differt.

Planta ad 25 cm. alta. *Cormus* 1·8 cm. diam., tunicis tenuissimis. *Vaginae basales* 1·5–3 cm. longae. *Folia* 4, basali 18–21 cm. longo ad 3 mm. lato, caulina 3, cum vagina 2–0·7 cm. longa 13–2 cm. longa, ad 4 mm. lata, in siccis nervo medio marginibusque leviter incrassatis. *Spica* laxe 2–3-flora, floribus diu fere erectis. *Bracteae* axem bene amplectentes, dimidio inferiore insigniter ad 1 cm. latae, 1·5–1 cm. longae; bracteolae 1–0·8 cm. longae, apice per 1 mm. liberae. *Perianthium* saturate roseum, 4–4·5 cm. longum, tubo 2–2·5 cm. longo apice 5–7 mm. diam.; segmenta obtusa exteriora ad 0·9 cm., interiora ad 1 cm. lata. *Stamina*, ut videtur in siccis, declinata, ultra dimidium segmentorum attingentia, antheris luteis 8 mm. longis. *Stigmata* 6, fere ad apicem segmenti attingentia. *Ovarium* 4 mm. longum.

Caledon Div.; near Elgin, Oct. 1931, *Eleanor Ryder* (Bolus Herbarium, no. 19,973).

Watsonia (Euwatsonia) Hutchinsonii *L. Bolus*; a *W. coccinea* Herb. caule longiore, foliis majoribus, perianthii segmentis inaequilongis, bracteis bracteolas superantibus, praecipue differt.

Planta culta 1·15 met. alta. *Cormus* 5 cm. diam., tunicis copiosis crassis. *Caulis* omnino vaginatus, ad 1 cm. diam. *Folia* 7 sine 3 superioribus spathiformibus 14–2·5 cm. longis ramos inflorescentiae ferentibus; radicalia 3, 66 cm., 72 cm., 60 cm. longa, 2 cm., 2·8 cm., 3·2 cm. lata; caulina 4, infimum 4 cm. supra basin positum, 45 cm. longum sine vagina clausa 11·5 cm. longa, ad 3·4 cm. latum, proximum 50 cm. longum sine vagina 19 cm. longa 2·8 cm. diam. compressa haud ventricosa, proximum 43 cm. longum sine vagina 23 cm. longa, proximum 33 cm. longum sine vagina 20 cm. longa, ramum inflorescentiae tardissime evolutum ferens, nervo medio prominente viridi, nervis intermediis inconspicuis, marginibus vix incrassatis lutescentibus. *Bracteae* obtusae, superne brunneae, 2·7–1·2 cm. longae, axem haud amplectentes; bracteolae 2·2–1 cm. longae. *Spica* terminalis sat dense 22-flora, ramis 5–9-floris. *Perianthium* laete rubrum, ad 7·9 cm. longum, tubo ad 5 cm. longo apice 6 mm. diam.; segmenta obtusa, apiculata, exteriora breviora angustioraque, ad 2·5 cm. longa, ad 6 mm. lata, interiora ad 2·9 cm. longa, ad 1 cm. lata. *Stamina* arcuata, segmenta superantia vel aequantia; filamenta inaequilonga, brevius 3·5 cm., duo longiora 3·9 cm. longa, antheris atrate purpureis 1·1 cm longis. *Stigmata* 6, fere apicem segmenti attingentia, saepe 1 mm. longa.

Hab. Exact locality uncertain, probably south-western Cape Province, Oct. 1928, *J. Hutchinson* (National Bot. Gardens, no. 2563/30.

Watsonia (Euwatsonia) Leipoldtii *L. Bolus*; a *W. Wordsworthiana* Matthews et L. Bolus perianthii tubo graciliore

stricti-oreque, segmentis minoribus, stigmatibus 6 bene exsertis, praecipue differt.

Planta culta ad 1·17 met. alta. *Caulis* ad 9 mm. diam. *Folia* 7 sine 3 superioribus spathiformibus 16–3 cm. longis ramos inflorescentiae ferentibus ; basalia 3, ad 52 cm. longa cum parte amplectente ad 21 cm. longa, ad 2·3 cm. lata ; caulina 4, cum vagina clausa 8–20 cm. longa 62–36 cm. longa, ad 2·5 cm. lata, viridia, marginibus lutescentibus haud incrassatis, nervo medio prominente, nervis intermediis crebris vix visis. *Spica* terminalis sat laxe ad 11-flora, ramis 7–8-floris, floribus fere erectis, morientibus tantum decurvatis. *Bracteae* acutae vel obtusae, dimidio superiore membranaceo, internodiis aequilongae, 3–1·8 cm. longae ; bracteolae bracteis aequillongae vel parum longiores, omnino coalitae. *Perianthium* pulchre roseum, tubo fere stricto 4·5–5 cm. longo apice 7–8 mm. diam., parte filiformi in cylindrum gradatim transeunte parumque breviore ; segmenta obovato-oblonga, obtusa, 2·2–2·4 cm. longa, exteriora ad 1·1 cm., interiora ad 1·2 cm. lata. *Stamina* arcuata, apicem segmentorum fere attingentia, filamentis cum antheris pollineque albidis. *Stylus* perianthium superans, ramis ad 4 mm., ramulis ad 2 mm. longis. *Ovarium* inferne leviter angustatum, exangulatum, 6 mm. longum.

Worcester Div. ; between Brand Vlei et Villiersdorp, Oct. 1929, *C. L. Leipoldt* (Bolus Herbarium, no. 19,942). Fl. in H. H. Bolus' garden, Oct.-Nov. 1930, 1931.

Watsonia (Euwatsonia) Archbelliae *L. Bolus* ; a *W. Pillansii* L. Bolus foliis angustioribus, spica minus densa, bracteis longioribus inferioribus acutis, praecipue differt.

Planta 1–1·10 met. alta. *Cormus* cum pluribus novellis arte adpressis ad 4 cm. diam., tunicis exterioribus tenuibus, interioribus sat crassis. *Folia* 10 sine spathiformibus 2–3 ramos inflorescentiae ferentibus 6–4·5 cm. longis, viridia, marginibus haud incrassatis, nervo medio prominente, nervis intermediis crebris inconspicuis ; radicalia 4, 44–56 cm. longa, ad 1 cm. lata ; caulina 48–10 cm. longa, internodia omnino vaginantia, vaginis clausis 1–10 cm. longis. *Spica* terminalis 19-flora, ramis 3–4-floris. *Bracteae* rubicundae, 4·5–2·5 cm. longae, axem basi tantum amplectentes ; bracteolae 3–2 cm. longae. *Perianthium* testaceo-aurantiacum, 8 cm. longum, tubo 5·3 cm. longo apice 8 mm. diam. ; segmenta abrupte acuta vel obtusa, exteriora ad 1·1 cm., interiora ad 1·5 cm. lata. *Staminodia* per 1·5 mm. libera. *Stamina* arcuata, dimidium segmenti bene superantia, antheris saturate purpureis ad 1·2 cm. longis. *Stigmata* 6, leviter exserta, 2 mm. longa. *Ovarium* inferne parum angustatum, 7 mm. longum.

Natal : Underberg (south-west Natal), alt. 5120 ft., *Mrs. J. E. Archbell* (National Botanic Gardens, no. 772/30). Fl. Kirstenbosch Nov.-Dec. 1931.

Watsonia (Euwatsonia) Comptonii *L. Bolus*; a *W. fulgente* Klatt habitu graciliore, foliis radicalibus paucioribus lutescente viridibus, bracteis longioribus, petalis latioribus, praecipue differt.

Planta saepius 60–80 cm. alta, inter graciliores generis. *Cormus* ad 2·8 cm. diam., tunicis copiosis tenuibus, arte intertextis. *Caulis* ad 6 mm., apice saepe 3 mm. diam., internodiis superioribus ad 5 cm. exsertis. *Vaginae basales* 4·5–6·5 cm. longae. *Folia* 6–7, basalia 2–3, ad 46 cm. longa, parte amplectente ad 14 cm. longa, ad 1·6 cm. lata, viridia, nervo medio marginibusque inconspicuis, nervis intermediis vix visis, caulinorum laminis ad 21 cm., 8 cm., 5 cm., 3·1 cm. longis, vaginis clausis ad 8 cm., 11 cm., 8 cm., 1·5 cm. longis, vel in exemplari depauperato laminis ad 13 cm. longis. *Spica* terminalis, sat laxe 11–14-flora, ramis 1–2, 2–3-floris. *Bracteae* basin versus purpurascentes, aliter brunneae, mox superne laceratae, acutae vel rarius acuminatae vel obtusae, 2–1 cm. longae; bracteolae fere ad apicem coalitae, 1·3–1 cm. longae. *Perianthium* aurantiaco-rubrum, 4·8–5·6 cm. longum, tubo intus albo lineato, lineis in notas albas 2 basi segmentorum desinentibus, 3·1–3·4 cm. longo apice 6 mm. diam., parte cylindrica partem filiformem parum excedente; segmenta obovato-oblonga vel late obovata, apice rotundata, exteriora 7–8·5 mm., interiora ad 1·1 cm. lata. *Stamina* arcuata, parum ultra dimidium segmentorum attingentia, filamentis aurantiacis, antheris atrate purpureis 7 mm. longis. *Stigmata* 6, fere ad apicem segmenti attingentia; ovarium 5 mm. longum.

Cape Peninsula; marsh near Smitswinkel, Nov. 19, 1931. *T. M. Salter*, 1840.

Var. **angustifolia** *L. Bolus*; folia 5, basale unicum elongatum inflorescentiam saepe superans, ad 7 mm., caulina ad 1 cm. lata.

Cape Peninsula; marsh near Red Hill, Simonstown, Dec. 1931, *T. M. Salter.*

XLV.—CONTRIBUTIONS TO THE FLORA OF SIAM.*

ADDITAMENTUM XXXV.

Canthium brunnescens *Craib*, Fl. Siam. Enum. ii. 135 (1932), descr. ampl. [Rubiaceae-Vanguerieae]; a *C. cochinchinense* Pitard foliis maioribus apice acuminatis recedens.

Arbor circa 10 m. alta (ex *Kerr*), corolla et nervorum axillis exceptis glabra, haud armata; ramuli sicci primo fusci, mox brunnei, angulati, demum cinerei, circa 4 mm. diametro. *Folia* elliptica vel oblongo-elliptica, apice obtuse acuminata vel subacuminata, basi saepe parum inaequilateralia, cuneata vel acuminata, 7–13 cm. longa, 2·8–5 cm. lata, rigide chartacea, sicca brunnea vel fusco-brunnea, subtus parum pallidiora, costa supra conspicua vel impressa subtus prominente, nervis lateralibus utrinque 6 supra conspicuis subtus prominentibus, nervulis vix conspicuis, subtus in nervorum axillis parce pubescentia, petiolo 5–10 mm. longo supra

*Continued from *K.B.* 1932, 289.

canaliculato suffulta ; stipulae diutius persistentes, e basi deltoidea subulato-acuminatae, 4 mm. longae. *Cymae* axillares, umbelliformes, ad 15-florae, pedunculo communi circa 3 mm. longo apice bracteis duabus circa 3 mm. longis instructo suffultae ; pedicelli ad 9 mm. longi ; alabastra obtuse acuminata, sicco fusca. *Receptaculum* 1·25 mm. longum. *Calyx* breviter denticulatus. *Corolla* extra glabra, tubo 2 mm. longo intra apice piloso, lobis 4 deltoideis obtuse acuminatis 3 mm. longis 2 mm. latis glabris. *Antherae* 1·25 mm. longae, exsertae. *Stylus* 1·75 mm. longus, stigmatibus globosis circa 1 mm. diametro.

Korat, Kao Lêm, 700 m., by stream in evergreen forest, *Kerr* 9890.

Canthium calcicolum *Craib*, Fl. Siam. Enum. ii. 136 (1932), descr. ampl. [Rubiaceae-Vanguerieae] ; a *C. umbellato* Wight eiusque affinioribus foliis multo minoribus, nervis lateralibus conspicue obliquis, inflorescentia depauperata recedit.

Arbuscula circa 5 m. alta (ex *Kerr*), corolla excepta glabra ; ramuli graciles, primo distincte angulati, cortice fusco-rubro obtecti, lenticellis pallidis conspicue longitudinaliter extensis. *Folia* lanceolata lateve lanceolata, apice obtuse acuminata vel caudato-acuminata, basi cuneata, saepe parum inaequilateralia, 3–5 cm. longa, 1–1·4 cm. lata, subcoriacea, sicca plus minusve brunnescentia, subtus pallidiora, costa supra conspicua subtus prominente, nervis lateralibus utrinque 4–5 supra conspicuis subtus prominulis obliquis bene intra marginem anastomosantibus, nervulis rete laxum supra conspicuum subtus prominulum efficientibus, petiolo 2–3 mm. longo suffulta ; stipulae diu persistentes, circa 2 mm. longae. *Cymae* axillares, umbelliformes, floribus ad 10 saepe paucioribus haud rarius solitariis, pedunculo communi usque ad 4 mm. longo apice parvi-bracteato suffultae, floribus parvis pedicellis circa 5 mm. longis suffultis ; flores aperti haud visi. *Receptaculum* 1 mm. longum, glabrum, sicco fuscum. *Calyx* 0·5 mm. longus, lobis deltoideis brevibus. *Corolla* extra glabra, intra apice villosa. *Antherae* 1·5 mm. longae. *Stylus* glaber. *Fructus* 5 mm. longus, 3·5 mm. diametro.

Patalung, Kaw Hua Tek, 50 m., evergreen on rocky limestone hill, *Kerr* 19,294.

Canthium calvum *Craib*, Fl. Siam. Enum. ii. 136 (1932), descr. ampl. [Rubiaceae-Vanguerieae] ; a *C. horrido* Blume foliis brevioribus pro longitudine latioribus apice rotundatis retusis glabris recedit.

Frutex circa 3 m. altus (ex *Kerr*) ; ramuli glabrescentes, cortice brunneo vel cinereo-brunneo obtecti, lenticellis haud conspicuis, spinis rectis axillaribus 7 mm. longis armati. *Folia* late elliptica, elliptico-rotundata, vel elliptico-obovata, apice rotundata, retusa, basi cuneata vel cuneato-truncata, 10–17 mm. longa, 8–13 mm. lata, rigide chartacea, sicco supra luteo-viridia, subtus pallide viridia, pagina utraque glabra, costa supra conspicua vel parum impressa subtus prominente, nervis lateralibus utrinque

3–4 bene intra marginem anastomosantibus supra subconspicuis subtus subprominulis, nervulis subobscuris, margine parum recurva, petiolo 1–3 mm. longo supra canaliculato suffulta ; stipulae deciduae. *Flores* virides (ex *Kerr*), per 1–3 ramulis abbreviatis axillaribus gesti ; pedicelli ad 2 mm. longi, glabri, apice bracteolis duabus oppositis inter se connatis 0·75 mm. longis instructi. *Receptaculum* 1·25 mm. longum, glabrum. *Calycis* tubus 1 mm. longus, 5-denticulatus. *Corollae* tubus vix 2 mm. longus, extra glaber, intra fere medio pilis deflexis adpressis longiusculis dense ornatus, lobi 2 mm. longi, 1·25 mm. lati, acuminati, glabri. *Filamenta* ad corollae tubi apicem affixa, 0·5 mm. longa, glabra ; antherae paululo ultra 1 mm. longae, connectivo apice producto. *Stylus* 2·5 mm. longus, inferne incrassatus et pubescens, stigmate mitriformi 0·75 mm. longo longitudinaliter costato.

Sakon, Wanawn, 200 m., evergreen by river, *Kerr* 8056.

Canthium ferrugineum *Craib*, Fl. Siam. Enum. ii. 138 (1932), descr. ampl. [Rubiaceae-Vanguerieae] ; a speciebus aliis spinis rectis armatis indumento ferrugineo ramulorum et foliorum et forma foliorum distinguendum.

Frutex circa 3 m. altus (ex *Kerr*) ; ramuli iuventute densius ferrugineo-hirsuti, mox glabri, cortice cinereo obtecti, lenticellis inconspicuis, spinis rectis gracilibus ad 1 cm. longis sparsis armati. *Folia* oblongo-elliptica, elliptica, vel oblongo-lanceolata, apice subacuminata, basi rotundata vel fere truncata, interdum parum inaequilateralia, 3–6 cm. longa, 1·3–2·7 cm. lata, rigide chartacea, sicca viridia vel saepe parum lutescentia, supra ad costam ferrugineo-subhirsuta, aliter pilis ferrugineis sat rigidis sparse instructa, subtus ad costam nervosque laterales pilis ferrugineis divergentibus sat rigidis dense tecta, aliter molliter ferrugineo-pubescentia, costa supra impressa subtus prominente, nervis lateralibus utrinque 4–6 supra impressis subtus prominulis, nervulis tantum paucis subconspicuis, margine plus minusve recurva, densius ciliata, petiolo 2–6 mm. longo dense ferrugineo-hirsuto suffulta ; stipulae deltoideae, acutae, 3 mm. longae, dorso dense adpresse ferrugineo-pubescentes, deciduae. *Flores* per 1–3, axillares, subsessiles ; alabastra medio constricta, apice sparse breviter ferrugineo-pubescentia. *Receptaculum* breve, ferrugineo-pubescens. *Calyx* receptaculo subaequilongus, extra adpresse ferrugineo-pubescens, lobis brevibus. *Corollae* tubus 3 mm. longus, extra glaber, intra pilis deflexis longiusculis adpressis dense sericeus, lobi 4, oblongo-lanceolati, 4 mm. longi, 2 mm. lati, dorso apice parce ferrugineo-pubescentes, arcte reflexi. *Stamina* 4, filamentis brevibus reflexis. *Stylus* exsertus, 4 mm. longus, inferne paulo incrassatus et pubescens, stigmate 1 mm. longo.

Ranawng, La-un, 10 m., scrub, *Kerr* 16,438.

Canthium horridulum *Craib*, Fl. Siam. Enum. ii. 139 (1932), descr. ampl. [Rubiaceae-Vanguerieae] ; a *C. horrido* Blume foliis

minoribus pro rata latioribus saepe apice retusis subtus ad nervorum axillas conspicue pilosis, floribus subsessilibus recedit.

Frutex circa 3 m. altus (ex *Kerr*) ; ramuli primo adpresse ferrugineo-pubescentes, mox glabri, cortice brunneo vel cinereo-brunneo obtecti, lenticellis haud conspicuis, spinis axillaribus rectis saepissime mox recurvis circa 4 mm. longis armati. *Folia* late elliptica vel subovata, apice rotundata obtusave, saepe retusa, basi late cuneata vel subrotundata, usque ad 1·8 cm. longa et 1·3 cm. lata, coriacea, sicco saepissime plus minusve lutescentia, supra ad costam pilis paucis brevibus ferrugineis subtus ad costam pilis longiusculis sparsis instructa praetereaque subtus in nervorum axillis breviter pilosa, costa supra impressa subtus prominente, nervis lateralibus utrinque 4–5 intra marginem anastomosantibus supra impressis subtus prominulis, nervulis obscuris, margine ciliata, petiolo circa 2 mm. longo suffulta ; stipulae parvae, deciduae. *Flores* solitarii vel saepissime gemini, ramulis axillaribus brevibus gesti ; pedicelli circa 2 mm. longi, glabri vel pilis paucis instructi, apicem versus bracteolis duabus oppositis inter se connatis 1 mm. longis instructi. *Receptaculum* circa 1 mm. longum, glabrum. *Calycis* tubus 1 mm. longus, denticulatus vel subdenticulatus. *Corollae* tubus 3 mm. longus, extra glaber, intra pilis tubo paulo brevioribus deflexis adpressis dense ornatus, lobi 5, lanceolato-oblongi, breviter acuminati, 3·75 mm. longi, 1·5 mm. lati, mox reflexi. *Discus* densius ferrugineo-puberuli. *Stamina* 5, filamentis ad corollae tubi apicem positis 1 mm. longis mox reflexis, antheris 1·5 mm. longis. *Stylus* 4 mm. longus, inferne adpresse pubescens, aliter glaber, stigmate mitriformi vix 1 mm. longo longitudinaliter costato. *Fructus* subglobosus, 8 mm. diametro.

Songkla, Tepa, under 50 m., savannah, *Kerr* 14,717.

Canthium longipes *Geddes* apud Craib, Fl. Siam. Enum. ii. 140 (1932), descr. ampl. [Rubiaceae-Vanguerieae] ; a *C. filipendulo* Pierre foliis sicco fuscis, floribus minoribus haud solitariis, stylo breviore, a *C. aciculato* Ridl. foliis minoribus, pedicellis elongatis tenuibus recedit.

Frutex 3–5 m. altus (ex *Winit*) ; ramuli graciles, breviter subadpresse hirsuti, cortice rubro-brunneo obtecti, spinis rectis gracilibus ad 1·2 cm. longis armati. *Folia* elliptica vel ovato-elliptica, apice obtuse acuminata, basi cuneata, 2–4 cm. longa, 1–2 cm. lata, sicca fuscescentia, subtus pallidiora, supra ad costam breviter hirsuta, aliter sparse setosa, subtus ad costam nervosque laterales setosa, ad nervorum axillas densius setosa, aliter sparse setosa, costa supra conspicua vel prominula subtus prominente, nervis lateralibus utrinque 4 supra conspicuis subtus prominulis, nervulis rete gracile efficientibus, margine setuloso-ciliata, petiolo 2–4 mm. longo breviter hirsuto suffulta ; stipulae ad 3·5 mm. longae, apice longius attenuatae, deciduae. *Flores* lutei (ex *Winit*), rarissime solitarii, pedunculis saepissime geminis 3–12 mm. longis flores 2–3 gerentibus cum pedicellis gracilibus sicco fuscis glabris vel

sparse hirsutis ; pedicelli ad 11 mm. longi. *Receptaculum* breve, parce hirsutum. *Calycis* segmenta 4, receptaculo conspicue breviora. *Corollae* tubus 3·5 mm. longus, extra glaber, intra barbatus, lobi 4, ovato-lanceolati, acuti, 1·5 mm. longi, glabri. *Stamina* 4, ad corollae tubi apicem affixa. *Stylus* 4 mm. longus, hirsutus.

Lampang, Mê Sung, 150 m., evergreen forest, *Winit* 1727.

Canthium nitidum *Craib*, Fl. Siam. Enum. ii. 141 (1932), descr. ampl. [Rubiaceae-Vanguerieae] ; a *C. umbellato* Wight eiusque affinioribus foliis minoribus, a *C. calcicolo* Craib foliis parum maioribus, floribus magis numerosis pedicellis conspicue puberulis suffultis recedit.

Arbor circa 8 m. alta (ex *Kerr*), inflorescentia excepta glabra ; ramuli fusco-rubri vel fusci, subgraciles, lenticellis saepissime parvis rotundatis. *Folia* elliptica vel late elliptica, apice obtuse acuminata vel caudato-acuminata, basi cuneata, ad 6·7 cm. longa et 3 cm. lata, rigide chartacea, sicca supra fuscescentia, nitida, subtus viridia, interdum fuscescentia, costa supra conspicua vel subprominula subtus prominente, nervis lateralibus utrinque 4–6 obliquis supra subprominulis subtus prominulis intra marginem anastomosantibus, nervulis rete laxum pagina utraque subprominulum efficientibus, petiolo ad 5 mm. longo suffulta ; stipulae subulato-acuminatae, diu persistentes, circa 3 mm. longae. *Cymae* axillares, umbelliformes, pedunculo communi ad 2 mm. longo apice parvi-bracteato suffultae, floribus ad 10 pedicellis circa 5 mm. longis puberulis sicco fuscis suffultis. *Receptaculum* sicco fuscum, sparse puberulum, circa 1 mm. longum. *Calycis* segmenta saepissime deltoidea, circa 0·75 mm. longa. *Corollae* tubus 2 mm. longus, extra glaber, intra apice villosus, lobi 5, tubo paululo longiores, circa 1 mm. lati. *Stamina* ad corollae tubi apicem posita, filamentis antheris subaequilongis 1 mm. longis glabris. *Stylus* stigmate 0·5 mm. longo incluso 6 mm. longus, glaber.

Surat, Kaw Prap, 10 m., evergreen forest, *Kerr* 12,521.

Canthium quadratum *Craib*, Fl. Siam. Enum. ii. 142 (1932), descr. ampl. [Rubiaceae-Vanguerieae] ; a *C. aciculato* Ridl. foliis minoribus, floribus maioribus, pedicellis et receptaculis glabris vel subglabris recedit.

Ramuli graciles, primo sparse breviter adpresse hirsuti, mox glabri, cortice rubro-brunneo obtecti, longitudinaliter striati, lenticellis inconspicuis, spinis axillaribus rectis ad 1·5 cm. longis armati. *Folia* oblonga vel oblongo-lanceolata, apice longius obtuse acuminata, basi rotundata, cordatula, 2–4·5 cm. longa, 1–2 cm. lata, rigide chartacea, sicco viridia, subtus pallidiora, pagina superiore ad costam setulosa, aliter setulis sparsis plus minusve deciduis instructa, inferiore ad costam nervosque laterales setulosa, in nervorum axillis hirsuta, et aliter setulis sparsis instructa, costa supra prominula subtus prominente, nervis lateralibus utrinque 4–5 supra conspicuis subtus prominulis, nervulis rete gracile sub oculo armato pagina

utraque conspicuum formantibus, margine pauperius setuloso-ciliata, petiolo 1–2 mm. longo suffulta ; stipulae deciduae. *Flores* pauci, ramulis axillaribus abbreviatis gesti, solitarii, pedicellis glabris vel subglabris 5 mm. longis circa 1·5 mm. supra basem bracteolis in cupulam connatis 0·5 mm. longis instructis suffulti ; alabastra apice rotundata, glabra. *Receptaculum* vix 1 mm. longum, glabrum. *Calycis* tubus receptaculo paululo brevior, apice subdenticulatus. *Corollae* tubus 2·5 mm. longus, apice 2·5 mm. diametro, extra glaber, intra pilis deflexis apice affixis dense sericeus, lobi 5, oblongo-lineares, 4 mm. longi, basi 1·75 mm. lati. *Stamina* reflexa, filamentis circa 1 mm. longis ad corollae tubi apicem positis glabris, antheris 2 mm. longis, connectivo apice in processum quadratum producto. *Stylus* 5 mm. longus, inferne incrassatus et breviter subhirsutus ; stigma 1 mm. longum, apice 2 mm. diametro, concavum, longitudinaliter costatum.

Ranawng, Kao Pawta Chongdong, 700 m., scrubby evergreen, *Kerr* 16,760.

Canthium sarmentosum *Craib*, Fl. Siam. Enum. ii. 143 (1932), descr. ampl. [Rubiaceae-Vanguerieae] ; a *C. parvifolio* Roxb. floribus distincte pedicellatis inter alia recedit.

Frutex circa 1·5 m. altus (an etiam scandens ?)—ex *Kerr* ; ramuli graciles, primo dense adpresse ferrugineo-hirsuti, mox glabrescentes, cortice rubro-brunneo obtecti, lenticellis inconspicuis. *Folia* ovato-lanceolata, apice angustata vel subacuminata, obtusa, basi late cuneata vel rotundato-cuneata, 1·5–2·7 cm. longa, 0·7–1·5 cm. lata, rigide chartacea, sicca saepe lutescentia, supra ad costam breviter ferrugineo-hirsuta, aliter sparse ferrugineo-hirsuta, subtus ad costam subdense ferrugineo-hirsuta, aliter sparse ferrugineo-hirsuta, costa supra impressa subtus prominente, nervis lateralibus utrinque 3–4 supra impressis subtus prominulis, margine demum parum revoluta, densius hirsuto-ciliata, petiolo circa 2 mm. longo dense adpresse ferrugineo-hirsuto suffulta ; stipulae breves, deciduae. *Flores* luteo-albi (ex *Kerr*), axillares, gemini vel solitarii, pedicellis usque ad 5 mm. longis glabris vel subglabris apicem versus bracteolis duabus parvis dorso apicem versus pauci-pilosis instructis suffulti. *Receptaculum* 0·75 mm. longum, fere glabrum. *Calycis* tubus receptaculo brevior, dentes parvae, ciliatae. *Corollae* tubus 1·75 mm. longus, extra glaber, intra longe sericeus, lobi 4, subovati, acuminati, circa 2 mm. longi, dorso apicem versus pilis paucis brevibus instructi. *Stamina* 4, ad corollae tubi apicem posita, antheris circa 0·6 mm. longis. *Stylus* 1·75 mm. longus, inferne breviter hirsutus. *Fructus* subglobosus, 8–9 mm. diametro.

Pattani, Betong, 200 m., scrub, *Kerr* 7638.

Canthium stellulatum *Craib*, Fl. Siam. Enum. ii. 143 (1932), descr. ampl. [Rubiaceae-Vanguerieae] ; a *C. tavoyano* (Parker) floribus conspicue minoribus distinguendum.

Frutex circa 2 m. altus (ex *Kerr*) ; ramuli graciles, primo sparse adpresse hirsuti, mox glabri, cortice brunneo vel fusco-brunneo obtecti, lenticellis parvis subconspicuis, spinis axillaribus rectis ad 1·7 cm. longis armati. *Folia* saepissime oblongo-elliptica lateve elliptica, rarius ovato-lanceolata vel elliptico-obovata, apice obtuse acuminata, basi cuneata lateve cuneata, 2·5–6 cm. longa, 0·8–2·4 cm. lata, membranaceo-chartacea, supra viridia vel plus minusve fuscescentia, subtus pallidiora, supra ad costam subsparse setuloso-hirsuta, aliter setis paucis instructa, subtus ad costam nervosque laterales subsparse hirsuta, aliter sparse hirsuta, costa supra prominula subtus conspicua, nervis lateralibus utrinque 4–6 pagina utraque conspicuis, nervulis rete laxum efficientibus, margine hirsuto-ciliata, petiolo 2–3 mm. longo adpresse hirsuto suffulta ; stipulae longe acuminatae, 3 mm. longae, dorso adpresse hirsutae, deciduae. *Pedunculi* e ramulis abbreviatis axillaribus orti, breves vel ad 4 mm. longi, flores solitarios vel saepissime geminos gerentes, apice parvi-bracteati ; pedicelli ad 13 mm. longi, graciles, glabri ; alabastra ambitu oblonga, acuminata, corollae lobis paulo ante anthesin apice stellatim divergentibus. *Receptaculum* circa 0·75 mm. longum, glabrum, sicco fuscum. *Calyx* 1 mm. longus, glaber, lobis 4 deltoideis acutis vel apiculatis dorso carinatis. *Corollae* tubus 4 mm. longus, extra glaber, intra pilis deflexis apice insertis dense sericeus, lobi 4, mox arcte reflexi, tubo paulo breviores, basi fere 2 mm. lati, glabri. *Stamina* reflexa, filamentis circa 0.75 mm. longis. *Stylus* exsertus, 6 mm. longus, basi apiceque exceptis pilis oblique erectis instructus ; stigmata duo, 0·75 mm. longa.

Patalung, Ban Kram, 100 m., scrub, *Kerr* 15,299.

Canthium strigosum *Craib*, Fl. Siam. Enum. ii. 143 (1932). descr. ampl. [Rubiaceae-Vanguerieae] ; a speciebus aliis ramulis strigosis, foliis breviter petiolatis basi rotundatis cordatulis, corollae tubo conspicue inflato recedit.

Frutex circa 2 m. altus (ex *Kerr*) ; ramuli iuventute strigosi, mox glabri, cortice fusco-rubro obtecti, lenticellis parvis rotundatis vel oblongis conspicuis, spinis axillaribus rectis vel subrectis ad 1 cm. longis armati. *Folia* oblonga, oblongo-ovata, ovatave, apice acute vel subacute acuminata, basi rotundata, cordatula, 6–9·5 cm. longa, 2·5–3·4 cm. lata, chartacea, sicca viridia, subtus pallidiora, pagina utraque sparse sed praesertim ad costam et inferiore etiam ad nervos strigosa, costa supra conspicua vel prominula subtus prominente, nervis lateralibus utrinque 6–7 supra conspicuis subtus prominulis, nervulis paucis pagina utraque subconspicuis, margine strigoso-ciliata, petiolo 2–3 mm. longo strigoso suffulta ; stipulae deciduae, 3–4 mm. longae, acuminatae, dorso strigosae. *Cymae* axillares, circa 9-florae, petiolo dimidio longiores, pedunculo communi brevi suffultae ; pedicelli circa 1 mm. longi, sparse adpresse hirsuti ; alabastra medio constricta, basi inflata, apice rotundata, brevissime obtuse acuminata. *Receptaculum* 1 mm. longum, sparse adpresse hirsutum, sicco fuscum. *Calyx* receptaculo brevior ; segmenta

inter se inaequalia, deltoidea, acuta, ciliolata. *Corolla* extra glabra ; tubus inflatus, circa 1·5 mm. longus et 3 mm. diametro, intra pilis deflexis apice affixis dense sericeus ; lobi 5, circa 2·5 mm. longi et 1·5 mm. lati. *Stamina* 5, ad corollae tubi apicem affixa, filamentis brevibus, antheris 1·5 mm. longis. *Stylus* cum stigmate circa 0·75 mm. longo 2·5 mm. longus, basi incrassatus et pilis brevibus oblique erectis instructus.

Trang, Kao Sung, 900 m., evergreen forest, *Kerr* 15,268.

Canthium strychnoides *Craib*, Fl. Siam. Enum. ii. 144 (1932), descr. ampl. [Rubiaceae-Vanguerieae] ; inter species armatas foliis maioribus ob corticem pallidum, nervos laterales paucos, calycem pro rata elongato-tubulosum distinguendum.

Ramuli primo crispatim puberuli, mox glabri, cortice cinereo vel stramineo-cinereo obtecti, lenticellis haud conspicuis, spinis axillaribus rectis 7–15 mm. longis sparse armati. *Folia* oblongo-elliptica, elliptica, vel elliptico-lanceolata, rarius subovata, apice obtuse acuminata, basi cuneata, acuminata, vel rarius rotundata, 6–10 cm. longa, 2·5–4·7 cm. lata, chartacea, vel rigide chartacea, sicca viridia vel iuniora fuscescentia, ad nervorum axillas pagina inferiore breviter barbata, aliter glabra, costa supra impressa subtus prominente, nervis lateralibus utrinque 4–6 supra conspicuis vel leviter impressis subtus subprominentibus bene intra marginem anastomosantibus, nervulis obscuris, petiolo usque ad 12 mm. longo glabro supra canaliculato suffulta ; stipulae deciduae. *Flores* ramulis abbreviatis axillaribus gesti, solitarii vel gemini, pedicellis circa 5 mm. longis glabris sub apicem bracteolis in cupulam connatis instructis suffulti ; alabastra acuminata, medio paulo constricta ; flores sublutei (ex *Kiah*). *Receptaculum* vix 2 mm. longum, glabrum. *Calyx* tubulosus, 5-6 mm. longus, apice subtruncatus vel irregulariter parvi-denticulatus, glaber. *Corollae* tubus 7 mm. longus, circa 4 mm. diametro, extra glaber, intra pilis infra apicem affixis deflexis fere ad tubi medium attingentibus dense instructus, lobi 5, crassi, 6 mm. longi, 3 mm. lati, glabri. *Filamenta* circa 1·5 mm. longa, glabra, antheris 4 mm. longis, connectivo apice deltoideo-producto. *Stylus* 9 mm. longus, superne glaber, inferne pilis oblique erectis breviter hirsutus, stigmate mox bilobulato paululo ultra 2 mm. longo.

Bachaw, *Kiah*, 24,305.

Canthium subaureum *Craib*, Fl. Siam. Enum. ii. 144 (1932), descr. ampl. [Rubiaceae-Vanguerieae] ; a *C. parvifolio* Roxb. foliis sicco luteo-viridibus supra glabris inter alia recedit.

Frutex circa 3 m. altus (ex *Kerr*) ; ramuli primo adpresse ferrugineo-pubescentes, longitudinaliter plus minusve costati, mox plus minusve glabrescentes, cortice brunneo obtecti, lenticellis haud conspicuis, spinis axillaribus rectis ad 1·8 cm. longis armati. *Folia* saepissime elliptica vel oblongo-ovata, apice obtusa rotundatave, basi rotundata, 1·5–2·6 cm. longa, 1–1·5 cm. lata, sicca parum

lutescentia, chartacea vel rigide chartacea, pagina superiore glabra, inferiore ad costam pilis rigidis subaureis sparse instructa, ad nervos laterales pilis similibus hic et illic instructa, et in nervorum axillis hirsuta, costa supra impressa subtus prominente, nervis lateralibus utrinque 3 supra impressis subtus prominulis sed marginem versus evanidis, nervulis obscuris, margine pauperius hirsuto-ciliata, petiolo circa 2 mm. longo suffulta ; stipulae anguste deltoideae, 2 mm. longae, inter se liberae, deciduae. *Flores* albi (ex *Kerr*), pauci, axillares, infra spinas orti ; pedicelli usque ad 1 mm. longi, glabri, apice bracteolis duabus parvis oppositis instructi. *Receptaculum* 1·25 mm. longum, glabrum. *Calycis* tubus receptaculo paulo brevior, denticulatus, glaber. *Corollae* tubus 2·5 mm. longus, extra glaber, intra pilis longiusculis deflexis adpressis dense tectus, lobi 5, late lanceolati, subacuti, 3·5 mm. longi, 1·5 mm. lati, mox reflexi, glabri. *Stamina* 5, ad corollae tubi apicem affixa, filamentis reflexis brevibus, antheris 1·5 mm. longis papillosis. *Stylus* ad 2 mm. exsertus, inferne paulo incrassatus, puberulus, stigmate longitudinaliter costato 1 mm. longo.

Prachuap, Hui Yang, near sea-level, scrub, *Kerr* 10,733.

XLVI.—AFRICAN ORCHIDS : IV.* V. S. Summerhayes.

Cynosorchis parva *Summerhayes*, sp. nov. ; statura parva, racemis 1–2-floris, labelli forma, calcari labello circiter duplo longiore valde distincta.

Herba terrestris, parva, usque 15 cm. alta. *Tubera* cylindrico-ellipsoidea, circiter 1 cm. longa. *Folia* radicalia, 3–5, late linearia vel anguste lanceolata, acuta, plus minusve recurvata, 1–2·5 cm. longa, 2–4 mm. lata. *Scapus* erectus, gracilis, apice 1–2-florus, saepissime infra medium cataphyllo singulo lanceolato acuminato instructus ; bracteae lanceolatae, acuminatae, 4–8 mm. longae, ovario pedicellato multo breviores. *Flores* erecti, partim virides, partim albi ; pedicellus cum ovario 1·3–2·7 cm. longus. *Sepalum* intermedium erectum, ovatum, acutum, 4–5·5 mm. longum, 2·75–4·5 mm. latum ; sepala lateralia patentia, oblique lanceolato-ovata, acuta, 5–6·5 mm. longa, 2·5–3·5 mm. lata. *Petala* linear-ligulata, acuta, leviter incurvata, 3·5–5 mm. longa, 0·7–1 mm. lata. *Labellum* album, trilobum, ambitu obtriangulare ; pars basalis indivisa 1·6–2·5 mm. longa ; lobus intermedius e basi angusta ± subito dilatatus, fere flabellatus, apice obcordatus apiculo interjecto, 4–6 mm. longus, 4–5 mm. latus ; lobi laterales lineari-oblongi vel ligulati, obtusi vel subacuti, basi a lobo intermedio angulo 45° divergentes, 4·5–6·5 mm. longi, 1–1·6 mm. lati ; calcar dependens, cylindricum, dimidio superiore paulo inflatum, subacutum, 11–16 mm. longum. *Anthera* erecta, apice rotundata, 1·6–2·5 mm. alta, canalibus leviter incurvatis 1–1·5 mm. longis. *Stigmata* crassa, apice clavato-truncata, 1·5–1·8 mm. longa, latere superiore duobus

*Continued from *K.B.* 1932, 193.

trientibus inferioribus rostelli lobis lateralibus adnata ; rostelli lobus intermedius triangulari-dentatus, brevis vel brevissimus.

Northern Nigeria. Vom, Bauchi Plateau, 900–1350 m., *Dent Young* ; plains between Hepham and Ropp, 1380 m., July 1921, *Lely* 361 ; Bauchi Plateau, grass plains, June 1930, *Lely* P337 (type) ; no exact locality, *Nelson* 9.

Southern Nigeria. Bamenda District, Bum, in grassland among boulders, 1200 m., May and June 1931, *Maitland* 1398, 1669.

This pretty little species seems to be very distinct in its combination of characters from all other species which have been described. The Cameroons specimens are slightly smaller in most parts than the others but in essential features are identical. There are apparently no near relatives of *C. parva* in Tropical Africa, but some of the Mascarene species approach it in certain features.

Habenaria armatissima *Rchb. f.* in Otia Bot. Hamburg. ii. 98 (1881).—*H. eburnea* Ridl. in Journ. Bot. xv. 293 (1886). *H. Lugardii* Rolfe in Dyer, Fl. Trop. Afr. vii. 228 (1898). *H. Dinteriana* Kraenzl. in Vierteljahrsschr. Nat. Ges. Zürich, lxxiv. 106 (1929).

There seemed no valid reason, except perhaps geographical distribution, for separating *H. armatissima* and *H. Lugardii* in the Flora of Tropical Africa, and re-examination of the material shows no essential differences. Some of the differences in the descriptions, e.g. the relative lengths of the lobes of the lip, are indeed incorrect, since in both " species " the middle lobe is much shorter than the side lobes.

A flower from the type specimen of *H. Dinteriana* communicated to Kew by Dr. Dinter agrees in essential structure with those of *H. armatissima*, while the descriptions in other respects are identical.

The case of *H. eburnea* Ridl. is different. This species was described as possessing *simple* petals, and this character was accepted by Rolfe. However, the strong resemblance of the specimen to the other species cited above, and the total dissimilarity from all other species of sect. *Diphyllae* with simple petals, led me to re-examine the type specimen in the British Museum, by kind permission of the Keeper of the Department of Botany. As a result the petals were found to be bipartite and the species to agree in all respects with *H. armatissima* Rchb. f.

These reductions extend the distribution of the species considerably so that it now stretches from Lake Tsad and Abyssinia in the north to Hereroland, Ngamiland and the Zambesi in the south.

Habenaria (§ Bilabrellae) Dalzielii *Summerhayes*, sp. nov. ; inter species sectionis sepalo intermedio obovato, petalis duobus trientibus superioribus tantum bilobis, calcari gracili apice haud inflato 5–7 mm. longo facile distinguenda.

Herba terrestris, glabra, usque 90 cm. alta. *Tuber* globosum, 8–9 mm. diametro, glabrum. *Caulis* erectus, teres, basi radicibus numerosis glabris instructus. *Folia* circiter 8, 4 inferiora linearia, acuta, basi vaginantia, 5–27 cm. longa, 7–12 mm. lata, superiora

subito decrescentia, sursum in bracteas abeuntia. *Racemus* 13–16 cm. longus, 4–5 cm. diametro, laxe multiflorus ; bracteae lanceolatae, acuminatae, 7–13 mm. longae. *Flores* erecto-patentes vel adscendentes, virides, pedicello cum ovario 2–3 cm. longo. *Sepalum* intermedium obovatum, subacutum, basi cuneatum, 6–7 mm. longum, 3–4 mm. latum ; sepala lateralia oblique semi-obovata, lateraliter apiculata, 7–10 mm. longa, 4 mm. lata. *Petala* duobus trientibus superioribus biloba ; pars indivisa 2–3 mm. longa, 1·5–2 mm. lata ; lobus posterior lanceolatus, acutus, 4–5 mm. longus, basi 1–2 mm. latus ; lobus anterior lineari-lanceolatus vel linearis, acutus vel acutissimus, 5–6 mm. longus, basi 0·5 mm. latus. *Labellum* ex ungue angusta 1–2 mm. longa tripartitum ; partitio intermedia linearis, obtusa, 8–10 mm. longa ; partitiones laterales anguste lineares, intermedia angustiores, 8·5–10·5 mm. longae ; calcar gracile, apice haud inflatum, leviter incurvatum, 5–7 mm. longum. *Anthera* inclinata, 3 mm. alta, canalibus porrectis apice valde incurvatis gracilibus 4–4·5 mm. longis. *Brachia stigmatifera* gracilia, apice oblique capitata, 6–7 mm. longa ; ovarium 7–9 mm. longum.

Sierre Leone. Hill Station, Oct. 1926, *Deighton* 2173 (in part).

Northern Nigeria. Kilba country, in a swamp, single specimen, Aug. 1909, *Dalziel* 222 (Type).

A very characteristic member of sect. *Bilabrellae*, but easily distinguished by the characters given in the diagnosis, together with the obovate dorsal sepal and almost equal lobes of the lip. The pedicels often have a peculiar sharp upward bend just below the ovary. Under his no. 2173 Deighton also collected a specimen of the abnormal form of *H. anaphysema* Rchb. f.

Habenaria (§ Bilabrellae) linguiformis *Summerhayes*, sp. nov. ; affinis *H. Hochstetterianae* Kraenzl. a qua foliis brevioribus, petali partitione anteriore late lineari angustiore, labelli lobo intermedio lateralibus satis longiore, antherae canalibus rectis nec apice incurvatis, staminodiis simplicibus linguiformibus differt.

Herba terrestris, erecta, ultra 30 cm. alta. *Folia* infima ad vaginas redacta, intermedia anguste lanceolata vel lineari-lanceolata, acuta, plus minusve recurvata, 4–6 cm. longa, 9–12 mm. lata, superiora in bracteas abeuntia. *Racemus* 10 cm. longus, 3 cm. diametro, laxiuscule 18–florus ; bracteae anguste lanceolatae, acuminatae, 9–15 mm. longae. *Flores* erecto-patentes, partim virides, partim albi, pro sectione mediocres ; pedicelli cum ovario circiter 2 cm. longi. *Sepalum* intermedium elliptico-obovatum, obtusum, concavum, 6 mm. longum, 2 mm. latum ; sepala lateralia oblique obovata, lateraliter apiculata, 7 mm. longa, 3·5 mm. lata. *Petala* bipartita ; partitio posterior linearis, 5 mm. longa, papillosa ; partitio anterior late linearis, dimidio superiore leviter angustata, acuta, 8 mm. longa, 0·7–0·8 mm. lata, papillosa. *Labellum* tripartitum ; partitiones lineari-filiformes, intermedia 10 mm. longa, laterales 6–7 mm. longae intermedia breviores ;

calcar inferne filiforme, apicem versus paulo ampliatum, plus minusve incurvatum, 18 mm. longum. *Anthera* subreclinata, 2 mm. alta, canalibus porrectis apice non incurvatis 4 mm. longis ; staminodia simplicia, linguiformia, circiter 1·5 mm. longa. *Brachia stigmatifera* porrecta, apice oblique clavata, 5–6 mm. longa ; rostelli lobus intermedius lineari-dentiformis, fere 1·5 mm. longus ; ovarium 9–10 mm. longum.

Northern Nigeria. Plain between Bukuru and Hepham, 1290 m., July 1921, *Lely* 343A.

A typical member of the section, closely allied to *H. Hochstetteriana* Kraenzl., an East African species, but differing in a number of minor points. It was collected with *H. limnophila* Summerhayes, but not distinguished by the collector.

Habenaria (§ Bilabrellae) Maitlandii *Summerhayes*, sp. nov. ; a *H. limnophila* Summerhayes calcari dimidio superiore sensim dilatato apice clavato obtuso differt.

Herba terrestris, glabra, 25–35 cm. alta, caule erecto terete. *Folia* inferiora circiter 3, linearia, acuta, basi vaginantia, usque 10 cm. longa, 10–14 mm. lata, superiora 3–4, lanceolata, acuminata, sursum decrescentia in bracteas abeuntia. *Racemus* laxiuscule 10–15-florus, 7–11 cm. longus, 3–4 cm. diametro ; bracteae lanceolatae, acuminatae, 1–2 cm. longae. *Flores* suberecti, albi, pedicello cum ovario 2–2·5 cm. longo. *Sepalum* intermedium ellipticum, subacutum, 5–6 mm. longum, 3 mm. latum, reflexum ; sepala lateralia oblique obovata, lateraliter apiculata, 7–8 mm. longa, 4–5 mm. lata, reflexa. *Petala* bipartita, papillosa ; partitio posterior linearis, 5–6 mm. longa ; partitio anterior e basi angustiore lineari-lanceolata, apice sensim angustata, 8–9 mm. longa, 1–2 mm. lata. *Labellum* ex ungue fere 2 mm. longa tripartitum ; partitio intermedia linearis, acuta, 10 mm. longa, circiter 0·75 mm. lata ; partitiones laterales anguste lineares, 7–8 mm. longae, 0·4 mm. latae ; calcar dependens, 10–11 mm. longum, dimidio superiore sensim dilatatum, apice clavatum, obtusum. *Anthera* erecta, 2–3 mm. alta, canalibus gracilibus 4–5 mm. longis ; staminodia biloba, fere 1 mm. longa. *Brachia stigmatifera* gracilia, apice capitata, 4–5 mm. longa ; rostelli lobus intermedius triangulari-subulatus, acutissimus, 1·75 mm. longus ; ovarium 8–9 mm. longum.

Southern Nigeria. Bamenda District, Uchan, on mountain slope among grass, 1680 m., June 1931, *Maitland* 1386.

Another typical species of sect. *Bilabrellae*, very similar to *H. limnophila* Summerhayes but differing in its rather less stiff growth and particularly in the shape of the spur. There are also other slight floral differences which are not easily expressed in words.

Habenaria (§ Bilabrellae) pauper *Summerhayes*, sp. nov. ; inter species sectionis floribus parvis, petali partitione posteriore quam anterior breviore et latiore, labelli lobo intermedio lateralibus fere duplo longiore distincta.

Herba terrestris, gracilis, glabra, circiter 30 cm. alta. *Caulis* erectus, teres, dimidio inferiore paucifoliatus, dimidio superiore foliis pluribus bracteiformibus instructus. *Folia* 3, linearia, acuta, basi vaginantia, 4–8 cm. longa, 3–7 mm. lata. *Racemus* 4 cm. longus, 1 cm. diametro; bracteae lanceolatae, acuminatae, 5–7 mm. longae. *Flores* suberecti, albi; pedicelli cum ovario 6–8 mm. longi. *Sepalum* intermedium elliptico-ovatum, 3 mm. longum, 1·5–2 mm. latum; sepala lateralia oblique obovata, latere posteriore fere recta, lateraliter, apiculata, 3 mm. longa, 2·5 mm. lata. *Petala* bipartita; partitio posterior linearis, 2·7 mm. longa; partitio anterior lanceolata-ligulata, acuta, margine anteriore sub apice dente parvo instructa, 2·5 mm. longa, 0·7–0·8 mm. lata. *Labellum* ex ungue 0·5 mm. longa tripartitum; lobus intermedius linearis, 5–5·5 mm. longus, 0·3 mm. latus; lobi laterales lineari-filiformes, 3 mm. longi; calcar dependens, dimidio superiore sensim inflatum, obtusum, 6 mm. longum. *Anthera* erecta, 1·5 mm. alta, canalibus gracilibus leviter incurvatis 2·5 mm. longis. *Brachia stigmatifera* crassiuscula, apice capitatim incrassata, 2·5 mm. longa; rostelli lobus intermedius e basi anguste triangulari subulatus, acutus, 1 mm. longus; ovarium 6-costatum, 4·5 mm. longum.

Southern Nigeria. Bamenda Station, among stones and boulders in grassland, 1500 m., May 1931, *Maitland* 1562.

The species, which is unfortunately represented by a single specimen, has flowers which conform to the normal type in sect. *Bilabrellae*, excepting that the dorsal sepal is not reflexed, but which are much smaller than most others I have seen of this type. *H. dives* Rchb. f. and its relatives, which have almost equally small flowers, form, however, a distinct and rather anomalous group within the section.

Habenaria (§ Plantaginеae) prionocraspedon *Summerhayes*, sp. nov.; *H. Englerianae* Kraenzl. affinis, a qua floribus minoribus, labelli lobis lateralibus semi-ovatis, calcari 5–6 cm. longo facile distinguenda.

Herba terrestris, erecta, ultra 35 cm. alta, basi non visa. *Caulis* teres, e basi fere usque inflorescentiam foliatus. *Folia* 5, elliptico- vel oblongo-lanceolata, acuta, apice ipso breviter setaceo-acuminata, basi vaginantia, 12–18 cm. longa, 3·5–5·5 cm. lata. *Racemus* 13 cm. longus, 10 cm. diametro, dense multiflorus; bracteae inferiores foliosae, ceterae minores, lanceolatae, acuminatae, pedicello cum ovario saepius breviores. *Flores* subpatentes, ut videtur albi. *Sepalum* intermedium late lanceolatum, acutum, concavum, erectum, 16–17 mm. longum, 6 mm. latum; sepala lateralia deflexa, oblique semi-ovata, falcatim acuminata, 18 mm. longa, 7 mm. lata. *Petala* simplicia, lineari-lanceolata, leviter recurvata, acuta, 16 mm. longa, 3 mm. lata. *Labellum* ex ungue cuneata trilobatum, in toto 3 cm. longum, 2·5 cm. latum; lobus intermedius ligulatus, subacutus, 15 mm. longus, 3 mm. latus; lobi laterales late semi-ovati ex intermedio leviter divergentes, basi integri, superne serrato-pectinati,

16 mm. longi, infra medium 11 mm. lati ; calcar inferne gracile, dimidio superiore sensum inflatum, clavatum, apice obtusum, satis incurvatum, 5–6 cm. longum. *Anthera* erecta, 5–6 mm. alta, canalibus crassiusculis leviter incurvatis 2·5 mm. longis ; staminodia parva, rotundata, 1 mm. longa et lata. *Brachia stigmatifera* clavata, obtusa, apice connata, circiter 7 mm. longa ; rostelli lobus intermedius anguste triangularis, acutissimus, leviter concavus, 2·5 mm. longus.

Southern Nigeria. Ogoja District, Boshi, 1050 m., *Rosevear* 61/29.

This beautiful species, which is closely allied to *H. Engleriana* Kraenzl., finds its nearest relatives otherwise in India where sect. *Plantagineae* is well represented. Unlike sect. *Multipartitae*, which has a similar distribution, there are no representatives of the former section as yet known from East Africa. The Indian species of sect. *Plantagineae*, however, either have strikingly different flowers or else the leaf arrangement is quite different. The usual type consists of a group of large leaves near the base of the stem and a number of reduced bract-like leaves in the upper half. In the two West African species the true foliage leaves occur up the stem to the base of the inflorescence.

Satyrium (§ Eusatyrium) fimbriatum *Summerhayes*, sp. nov. ; affine *S. membranaceo* Sw. et *S. Principi* Bolus, ab illo rostelli lobo intermedio triangulari acuto nec ampliatim semiorbiculari, ab hoc statura foliis floribusque minoribus, florum colore, stigmate integro differt.

Herba terrestris usque 40 cm. alta ; tubera ovoidea, circiter 1 cm. longa. *Folia* 2, radicalia, humistrata, ovata vel suborbicularia, subacuta vel obtusa, 3–7 cm. longa, 2·5–6 cm. lata, ut videtur subcarnosa. *Scapus* erectus, teres, glaber, vaginis 3–5 lanceolatis acuminatis membranaceis subdistantibus instructus. *Racemus* cylindricus, 6–10 cm. longus, circiter 2·5 cm. diametro, subdense 5–16-florus ; bracteae lanceolatae vel elliptico-lanceolatae, acutae vel acuminatae, ovarium pedicellatum superantes, sub anthesi dimidio superiore recurvatae. *Sepalum* intermedium ligulato-oblanceolatum, obtusum, 8–10 mm. longum, 2–2·5 mm. latum ; sepala lateralia curvatim oblongo-lanceolata, subacuta, 8–11·5 mm. longa, 2·5–3 mm. lata ; omnia sepala cum petalis basi adnata. *Petala* elliptico-oblanceolata, subacuta, superne marginibus lacerato-fimbriatis, 8–10·5 mm. longa, 2·5–3·5 mm. lata. *Labellum* late ellipsoideum, leviter cucullatum, in toto 9·5–12 mm. longum, inferne 6–7 mm. latum, in apicem suborbicularem ± reflexum marginibus lacerato-fimbriatis 3·5–4 mm. longum productum ; calcaria gracilia, ovario ± adpressa, cylindrica, circiter 3 cm. longa. *Columna* incurvata, 3–5 mm. longa ; labium stigmatiferum transverse oblongo-ellipticum, 1·5–2 mm. altum, 3–4 mm. latum ; rostellum basi quadratum, lobis lateralibus brevissimis dentiformibus, lobo

intermedio triangulari acuto, totum rostellum 1·5–2 mm. longum, basi 1·25–2 mm. latum.

Kenya Colony. Kinangop Plateau, Aberdare Mts., lower slopes of Kipipiri, in open grassland close to forest edge, 2490 m., *Honoré* 1877 (type); Tinderet, *Mrs. Mainwaring* 1287.

Flowers rose coloured or pale pink, scentless.

A remarkable species whose nearest relatives are the two South African species mentioned in the diagnosis. The most striking feature is the lacerate or fimbriate margins of the petals and of the apex of the lip. The occurrence of a new species of this affinity so remote geographically from the two older species is particularly interesting, especially as neither of the southern species occurs in Natal or the Transvaal.

XLVII.—THE GENUS STROBILANTHOPSIS.

E. Milne-Redhead.

The genus *Strobilanthopsis* was founded in 1900 by Spencer Moore on a specimen collected by Rand at Fort Gibbs in Southern Rhodesia, and named *S. hircina*. The genus remained monotypic until 1911, when Moore transferred to it the Angolan plant, *Hygrophila glutinifolia* Lindau, and two years later he described yet a third species, *Strobilanthopsis Rogersii*, from the Belgian Congo.

Moore apparently was very doubtful whether Rand's specimen deserved generic distinction, and proposed the new genus *Strobilanthopsis* somewhat unwillingly. Further material, however, has shown that he was undoubtedly correct in referring it to a new genus. *Strobilanthopsis* seems to be most closely related to the genera *Mellera* and *Dyschoriste*, and forms, as Moore suggested, a connecting link between the subtribes *Euruellieae* and *Strobilantheae* as understood by Clarke, to which these two genera respectively belong. It agrees with *Mellera* in its glandular calyx, with long strap-shaped segments, in its pollen, and in its unpleasant goat-like scent, but is readily separable on account of its subsessile leaves, its almost regular corollas with upright subequal lobes, and its usually two-seeded capsule. *Mellera* has markedly petioled leaves, strongly zygomorphic corollas, and capsules with more than four seeds. *Strobilanthopsis* differs from *Dyschoriste* in its calyx and its two-seeded capsule.

Volume v. part 1 of The Flora of Tropical Africa, published in 1899, contains the description of *Dyschoriste linifolia*, a species founded by C. B. Clarke on a specimen in the Hooker Herbarium at Kew which was collected by Sir John Kirk in the Highlands of the Batoka Country (Northern Rhodesia) between July and October 1860, and to which T. Anderson gave the manuscript name, *Calophanes linifolius*. Clarke adopted Anderson's manuscript epithet, *linifolius*, for this species, and referred it to the genus *Dyschoriste* Nees (1832), which just antedates the genus *Calophanes* Don (1833).

In his description of *Dyschoriste linifolia*, Clarke states that the calyx is divided two-thirds of the way down, and a drawing made by that author on the type sheet shows three of the segments two-thirds, and two slightly less than half, the total length of the calyx. An examination of the type material reveals that the calyx-segments are free almost to the base ; the calyx is about 18 mm. long, while the segments are about 16·5 mm. long, giving a length of about 1·5 mm. for the calyx-tube.

The linear strap-shaped lobes, very short tube and densely glandular indumentum of the calyx, and the almost regular corolla, together with the peculiar goat-like smell which is noticeable when the inflorescence is boiled, at once place the plant in the genus *Strobilanthopsis* S. Moore.

It appears that Moore overlooked *Dyschoriste linifolia* when he founded the genus *Strobilanthopsis*, and a comparison of *S. hircina* with *S. linifolia* reveals the rather greater development of the lateral shoots in Kirk's specimen to be the chief point of difference. The writer does not consider that this and other minor differences justify the specific separation of *S. hircina* from *S. linifolia*.

Strobilanthopsis linifolia shows great variation in the size of its calyx and corolla ; the flowers of specimens gathered in the same collecting may be far from uniform in this respect, whilst those from different localities often vary to a still greater degree. The leaves of this species fall into three classes, namely, those of the primary, secondary and tertiary shoots, and the appearance of the specimens is greatly influenced by the presence or absence of the secondary or of the primary and secondary leaves. The primary leaves are rather large, sometimes as much as 7 cm. long, and are evidently developed during the wet season. The secondary leaves are similar to those of the primary shoots, but are considerably smaller. Whilst the primary leaves have usually fallen by the beginning of the dry season, the secondary leaves are frequently persistent during the flowering period. The small leaves of the short tertiary flowering shoots may be either folded or expanded, and this character again greatly influences the general appearance of the specimens. Specimens may be found which appear to differ widely from each other, but, after a careful examination of all the material in the Herbaria at Kew and at the British Museum, the writer cannot find any satisfactory reasons for believing that more than one species is represented by the material here cited, and accordingly *S. glutinifolia* and *S. Rogersii* should be considered as being conspecific with *S. linifolia*.

The description of a new species, *S. prostrata*, very close to, but apparently distinct from, *S. linifolia*, is appended.

The genus *Strobilanthopsis* appears to be endemic in the south tropical African plateau, having been recorded from the Katanga province of the Belgian Congo, from Angola, from both Northern and Southern Rhodesia and from Nyasaland. *S. linifolia*, grows in the savannah country, often in stony places and on kopjes, but it is also to

be found growing in the dry loamy or sometimes sandy soils of the *Brachystegia* or *Cryptosepalum* woodlands, where it is one of the last herbs to continue in flower after the end of the rains. *S. prostrata* is known only from the Kalahari sand area of the Mwinilunga District of Northern Rhodesia, where the writer found it growing in rather loose dry sand in open spaces in the *Cryptosepalum* woodland.

1. Strobilanthopsis linifolia (*T. Anders. ex C. B. Cl.*) *Milne-Redhead,* comb. nov.—*Calophanes linifolius* T. Anders. MS. in Herb. Kew., et ex C. B. Cl. in Fl. Trop. Afr. v. 76 (1899), pro syn. *Dyschoriste linifolia* (T. Anders. ex C. B. Cl.) C. B. Cl. in Fl. Trop. Afr. v. 76 (1899). *Strobilanthopsis hircina* S. Moore in Journ. Bot. xxxviii. 202 (1900) ; Fl. Trop. Afr. v. 511 (1900) ; Engl. u. Prantl, Pflanzenfam. Nachtr. iii. 322 (1908). *Hygrophila glutinifolia* Lindau in Warb. Kunene-Sambesi Exped. 374 (1903). *Strobilanthopsis glutinifolia* (Lindau) S. Moore in Journ. Bot. xlix. 296 (1911) ; S. Moore in Journ. Bot. li. 213 (1913). *Strobilanthopsis Rogersii* S. Moore in Journ. Bot. li. 188 (1913).

NORTHERN RHODESIA. Highlands of Batoka Country, without precise locality, July–Oct. 1860, *Kirk s.n.* (typus *S. linifoliae* in Herb. Kew.). N'dola District : N'dola, Oct. 1906, *Allen 318* : " bushy herb growing in loamy soil " ; on sand at 1500 m. altitude at Bwana M'Kubwa, July 1909, *Rogers 8368*. Broken Hill District : in stony places in *Brachystegia* wood, at 1260 m. altitude, 45 Km. south-west of Broken Hill, 13 July 1930, *Hutchinson & Gillett 3609* : " herb with strong rank smell ; flowers mauve " ; between Lusaka and Broken Hill, 13 July 1930, *Pole Evans 2850*. Mpika District : common on kopjes at 1700 m. altitude 51 Km. north-east of Serenge Corner, 25 July 1930, *Hutchinson & Gillett 4077* : " plant 6 dm. high, flowers pale mauve." Fort Rosebery District : in dry semi-cultivated soil near villages by Lake Bangweolo, at 900 m. altitude, May 1924, *Jelf 3* (Herb. Mus. Brit.) : " shrubby plant 0·9 m. high with slight scent ; flowers pale yellow." Mumbwa District : Chinenga, June–July 1911, *Mrs. Macaulay 833* : " flowers blue." Mwinilunga District : on sand in *Cryptosepalum* woodland near R. Wamibobo, 6 Aug. 1930, *Milne-Redhead 841* : " perennial herb with very aromatic unpleasant scent ; calyx very glandular ; flowers lilac with orange throat and honey-guide."

SOUTHERN RHODESIA. Fort Gibbs, Sept. 1898, *Rand 640* (typus *S. hircinae* in Herb. Mus. Brit.) : " the plant has a rank disagreeable odour." Senoia, among rocks, Sept. 1926, *Rand 254* (Herb. Mus. Brit.) : " small undershrub covered with glandular hairs and with a rank odour ; flowers purple."

NYASALAND. Narawitawa (or Namwitawa) Mountain at 1600–2000 m. altitude, Sept. 1902, *McClounie 77* : " plant rarely over 3 dm. high."

ANGOLA. In sandy places under trees between R. Longa and R. Lazingua, at 1350 m. altitude, 18 April 1900, *Baum 830* (typus *S. glutinifoliae*). In mixed woods in company with *Plectranthus*

floribundus N.E. Br. and *Dicoma elegans* Welw. in rocky situations on Mt. Amaral, Cunene, 2 Aug. 1905, *Gossweiler 1835* (Herb. Mus. Brit.) : " a suffruticose herb 6 dm. high ; primary stems erect, branched, sparsely leafy ; corolla tube brownish, rim violet-coloured." Common in herb grown short thickets at Kassuango, Kuiriri, 10 April 1906, *Gossweiler 2979* (Herb. Mus. Brit.) : " a suffruticose densely branched undershrub of greyish green coloration ; branches ascending, rigid ; leaves thick, sub-fleshy, glandular hairy, with a goaty odour ; flowers ascending, campanulate ; tube brownish, blue on outside ; limb pale bluish with five equal lobes."

Belgian Congo. Near Sakania, 1200 m. altitude, 18 Aug. 1911, *Rogers 10021*. Kamatanda, about 120 Km. north of Elisabethville, Oct. 1912, *Rogers 10329* (typus *S. Rogersii* in Herb. Mus. Brit.). Elisabethville, at 1200 m. altitude, *Rogers 26255* (Herb. Mus. Brit.) : " viscid and aromatic plant growing up to 1·8 m. high." Elisabethville, 27 May 1912, *Bequaert 463* (Herb. Brux.).

2. Strobilanthopsis prostrata *Milne-Redhead*, sp. nov. ; a *S. linifolia* (T. Anders. ex C. B. Cl.) Milne-Redhead, habitu prostrato, foliis glabris differt.

Herba perennis ; caules e caudice centrali undique humistrati, 6–7 dm. longi, valde ramosi, basin versus lignosi, apicem versus glanduloso-pubescentes. *Folia* caulium principalium delapsa ; folia ramorum axillarium oblongo-oblanceolata, apice subacuta, basi attenuata, sessilia, utrinque glabra, 2·5 cm. longa, vix 5 mm. lata. *Inflorescentiae* axillares, 1–3-flores ; bracteae lineares, circiter 8 mm. longae, dense glanduloso-hirsutae. *Calyx* fere usque ad basin 5-partitus, 16–21 mm. longus, tubo 1·5 mm. longo incluso ; segmenta subaequalia, linearia, vix 1 mm. lata, apice rotundata, dense glanduloso-hirsuta. *Corolla* lilacina 30 mm. longa, extra breviter glanduloso-pubescens ; tubus 22 mm. longus, parte inferiore cylindrica 10 mm. longa, 2 mm. diametro, parte superiore aliquanto expansa, fauce aurantiaca valde venoso-palatifera ; lobi 5, subaequales, obovato-oblongi, apice plus minusve emarginati, 8 mm. longi, 5–6 mm. lati. *Stamina* 4 ; filamenta parte inferiore per paria lateralia (posticum cum antico) ope membranae angustissimae 16 mm. connata et tubo corollae 16 mm. inde a basi adnata (i.e. parte connata libera nulla), parte superiore libera, illa filamenti postici circiter 5 mm. longa, antici circiter 6 mm. longa ; antherae 2·5 mm. longae, basi mucronatae. *Ovarium* 4-ovulatum, oblongum, 3 mm. altum, apicem versus breviter et parce glanduloso- et eglanduloso-pubescens ; discus breviter cupuliformis. *Capsula* 2-sperma, oblonga, aliquanto compressa, apice acuminata, basi attenuata, 15 mm. longa, supra breviter glanduloso-pubescens.

Northern Rhodesia. Mwinilunga District : on sand in *Cryptosepalum* woodland a few kilometres south of Mwinilunga, 26 Aug. 1930, *Milne-Redhead 971* (typus in Herb. Kew.). Prostrate perennial with branches radiating from central rootstock ; leaves glabrous ; inflorescence glandular with goaty smell ; flowers lilac with orange throat.

XLVIII.—PLANTS NEW TO ASSAM : V.* C. E. C. Fischer.

Sorbus expansa *Koehne* [Pomaceae].

Known from China.

Delei Valley, Chibaon, 6000 ft., *Kingdon Ward* 8077. " A shrub or small tree of the mixed forest, chiefly in open situations along the ridge."

Sorbus Wenzigiana *Koehne* [Pomaceae].

Hitherto known from China.

Delei Valley, 12,000–13,000 ft., fls. June, *Kingdon Ward* 8384. " Scrubby shrub with black bark and knobby stems rising a little above the scrub Rhododendrons. Fls. reddish-crimson."

Potentilla microphylla *Don* [Rosaceae].

Described from Garhwal to Sikkim.

Delei Valley, Kaso, 4000 ft., fls. July, *Kingdon Ward* 8407. " Forms flat cushions on the sodden alpine turf slopes where there is still plenty of snow. Fls. buttercup-yellow."

Potentilla monanthes *Lindl.* var. **sibthorpioides** *Hook. f.* [Rosaceae].

Reported only from Sikkim.

Delei Valley, Kaso, 13,000 ft., fls. July, *Kingdon Ward* 8426. " A flat rosette-plant on alpine slopes among patches of dwarf Juniper. Fls. bright-yellow."

Rubus pectinaris *Focke* [Rubiaceae].

Known from China.

Delei Valley, 10,000–11,000 ft. Fls. Aug., *Kingdon Ward* 8601. " Creeping plant with erect flowering shoots, forming a loose carpet on open slopes in the Rhododendron-Abies forest. Fls. dark-pink."

Chasalia lushaiensis *C. E. C. Fischer* [Rubiaceae].

This species, originally described from specimens from the Lushai Hills, has been found by the same collector in fruit in the Garo Hills.

Tura Mountain, 4000 ft., fr. Oct., *Mrs. N. E. Parry* 790, 792.

Fruit subglobose or more or less didymous and then wider in one direction than long, 6–7 mm. long, up to 9 mm. wide, smooth, black. *Seeds* hemispheric, inner face deeply concave. Lushai name : *Ampangthuam*.

Paederia Cruddasiana *Prain* [Rubiaceae].

Found in the Kachin Hills.

Garo Hills, Tura, 1300 ft., fls. and fr. Oct., *Mrs. N. E. Parry* 742. " Flowers dull blueish-white, deep reddish-mauve within the tube." Garo name : *Pasim*.

The plant is described as quite glabrous except the corolla, but the syntype specimens at Kew have the upper part of the rhachis of the inflorescence and its divisions minutely puberulous and the bracts

*Continued from *K.B.* 1932, 203.

ciliate. In the Garo Hills specimens the indumentum is sometimes denser.

Colquhounia Seguini *Van.* [Labiatae].

From W. China.

S. Lushai Hills, near Lungleh, 4000 ft., fl. and fr. Feb., *W. J. L. Wenger* 436. " A straggling bush in moderately thick forest. Fl. dull-red."

This specimen seems to be half-way between the typical form and var. *pilosa* Rehd., being more pilose than the former but less densely so than the latter.

Molineria oligantha *C. E. C. Fischer*, sp. nov. [Amaryllidaceae]; *M. Finlaysonianae* Baker similis, scapis 2–3-floris, bracteis floribusque multo majoribus differt.

A *herb*; root fibrous; base of stem thickened by the persistent widened bases of the leaf-petioles. *Leaves* several, narrowly elliptic-lanceolate, acuminate at both ends, plicate, 16–30 cm. long, 1·7–3·8 cm. wide, glabrous, margins sometimes bearing minute, distant glands; petioles 6–15 cm. long, eventually breaking up into fibres. *Racemes* 1–2, radical, 2–3-flowered, 8–10 cm. long, slender gradually thickening up to the first flower, thinly fulvous-tomentose. *Bracts* lanceolate, finely acuminate, 1·9–2 cm. long, margins sparsely fulvous-villous. *Pedicels* 5–6 mm. long, thinly fulvous-hairy. *Perianth* 3 cm. diam., segments in 2 rows; the 3 outer elliptic-oblong, acute, thick, 1·1 cm. long, with an apical tuft of hairs, glabrous or with a line of fulvous hairs on the back; the 3 inner subcircular or broadly oblong, obtuse, petaloid, 1 cm. long, glabrous. *Stamens* 6, free; filaments very short; anthers linear-oblong, obtuse, base shortly 2-lobed, 6 mm. long. *Ovary* 1·1 cm. long, densely fulvous-villous; 3-celled; ovules several, subdiscoid; style linear, 8 mm. long, apex clavate. *Fruit* not seen.

Delei Valley, 7000–8000 ft., fls. May, *Kingdon Ward* 8190. " Undergrowth in the temperate rain-forest. Flowers bright sulphur-yellow, sweetly fragrant."

XLIX.—LAUGERIA "VAHL" = TEREBRARIA KUNTZE.

T. A. Sprague.

A new genus of Rubiaceae was described by J. D. Hooker in Benth. et Hook. f. Gen. Pl. ii. 101 (1863) under the name " *Laugeria*, Vahl, Ecl. 26, t. 10, non Jacq." Vahl, however, proposed no genus of that name: what he did was to publish descriptions of one old species (Symb. Bot. iii. 40: 1794) and two new species of the pre-existing genus *Laugieria* Jacq. (1760), using the spelling " *Laugeria* " adopted by Linné in 1767 (Syst. ed. 12, 177). Hooker founded a *new genus* on one of the new species, *L. resinosa* Vahl, and should therefore have given it a *new generic name*. The name " *Laugeria* Vahl " was, nevertheless, accepted without question by K. Schumann in Engler & Prantl, Nat. Pflanzenfam. iv. Abt. 4, 96

(1891), Hitchcock in Miss. Bot. Gard. Rep. iv. 93 (1893), Urban, Symb. Ant. iv. 592 (1911), Wernham in Journ. Bot. 1916, 332, and Britton & Wilson, Bot. Porto Rico & Virgin Isl. 238 (1925).

In 1903, Otto Kuntze, who was a very accurate and painstaking bibliographical worker, detected the error, and reduced *Laugeria* " Vahl " Hook. f. to *Terebraria* DC. (1830). De Candolle, however, should not be cited as the author of *Terebraria*, as he merely cited *Terebraria* Sessé as a synonym of *Guettarda resinosa* (Vahl) Pers. *Terebraria*, as a valid generic name, dates from 1903, when it was adopted by Kuntze in place of *Laugeria* Hook. f. The synonymy and distribution of the genus and its two species are as follows :—

Terebraria *Kuntze* in Post et Kuntze Lexic. Gen. Phan. 552 (1903). *Laugeria* Hook. f. in Benth. et Hook. f. Gen. Pl. ii. 101 (1863), non *Laugieria* Jacq. (1760) ; Dalla Torre et Harms, Gen. Siphonog. 501 (1905).

T. resinosa (*Vahl*) *Sprague*, comb. nov.—*Laugeria resinosa* Vahl, Ecl. i. 27 (1796) ; Urb. Symb. Antill. iv. 592 (1911) ; Britton & P. Wils. Bot. Porto Rico & Virgin Isl. 238 (1925). *Guettarda resinosa* Pers. Syn. i. 201 (1805). *Stenostomum resinosum* Griseb. Fl. Brit. W. Ind. 334 (1861). *Antirrhoea resinosa* Cook & Coll. in Contrib. U. S. Nat. Herb. viii. 82 (1903).

Distrib. Porto Rico, Montserrat (loc. typ.) Dominica, Martinique St. Vincent.

T. densiflora (*Griseb.*) *Sprague*, comb. nov.—*Stenostomum densiflorum* Wright ex Griseb. Cat. Pl. Cub. 132 (1866) ; Britton & Millsp. Bahama Fl. 415 (1920). *Laugeria densiflora* Hitchcock in Miss. Bot. Gard. Rep. iv. 93 (1893).

Distrib. Bahamas, Cuba (loc. typ.), Haiti.

The two species are superficially similar, but may easily be distinguished by the venation, which is more or less parallel and at right angles to the midrib with oblong or linear areoles in *T. resinosa*, and closely and irregularly reticulate with isodiametric or short areoles in *T. densiflora*.

L.—MISCELANEOUS NOTES.

Hay Collection of Flower Paintings and Wood Specimens. A bequest by the late Dr. Alfred Hay of his collection of wood specimens and flower paintings has recently been received at Kew. Dr. Hay spent many years in India. He was attached at one time to the Royal Indian Engineering College, Coopers Hill, and later (1908–23) was Professor of Electrical Technology at the Indian Institute of Science, Bangalore. It was during vacation periods spent largely in the hills in Mysore that Dr. Hay was able to devote leisure hours to his hobby of illustrating the rich and varied flora of his surroundings.

The numerous paintings, which are in water-colours (body-colours) and unmounted, constitute a valuable addition to the collection of illustrations at Kew. Although the individual pictures are in some instances incomplete, in the majority of them flowers, fruit and leaves are faithfully depicted. Great pains appear to have been taken by the artist in maintaining accuracy of detail and colouring, and the talent displayed is of a high order.

The wood specimens consist mainly of small hand-specimens and of plank-specimens several feet in length. About two dozen different species are represented among the plank-specimens, many of which are beautifully figured. The hand specimens of Indian woods, numbering over two hundred and all specifically named, include many little-known Indian woods. They were received neatly housed in a specially made pull-drawer cabinet. A useful set of some of the more important timbers of British Guiana is also included among the miscellaneous hand-specimens.

Cacao.—The appearance of a second edition* of this well-known work on *Cacao* by Dr. C. J. J. Van Hall will be welcomed by all those in any way interested in this crop. This new edition incorporates the results of most of the important work that has been done on *Cacao* since the appearance of the first edition in 1914. As work of this sort is very scattered and appears in the literature of several different countries, Dr. Van Hall has rendered a great service in having collected and presented it in a condensed and readily available form. Although similar in appearance to the first edition, and consisting of approximately the same number of pages, there are important additions and modifications in the subject matter. The first alteration that claims attention is the substitution of the word *Cacao* for Cocoa on the title page. This is fitting, inasmuch as the book is concerned with the production of the *Cacao* bean rather than with its manufacture into cocoa or cocoa products. A chapter which was devoted to the cocoa and chocolate industry in the original edition has now been entirely omitted, no doubt because cocoa and chocolate manufacture is so fully dealt with in other works. Its place is taken by a discussion entitled "Some characteristics of the Marketable Bean," which is of far greater value to the practical producer.

Among the important new features is the chapter devoted to selection. Here the author outlines the methods employed in improving the crop and indicates the progress that has been made. Vegetative propagation in *Cacao*—in common with many other tropical plantation crops—has assumed considerable importance in recent years. The author wisely devotes special attention to this aspect of *Cacao* cultivation and improvement, and outlines the improved technique in budding that has been evolved. Under the heading of botanical characteristics the important advances that

**Cacao*, by Dr. C. J. J. Van Hall. Second edition, revised, pp. xi+514, with 176 illustrations. Macmillan & Co., Ltd., St. Martin's Street, London, 1932. Price 28*s*.

have been made in the cytology of the plant are dealt with and reference is made to the researches of such workers as Cheesman, Kuyper, Heyn and others. The excellent illustrations that appear of wild *Cacao* of the Forastero type are of particular interest. This wild *Cacao* was first brought to light by Stahel in remote parts of Surinam (see *Kew Bulletin*, 1930, 1).

A large amount of additional information on diseases and insect pests is incorporated and a summary is given of much of the important work relating thereto that has been done on the Gold Coast. The chapter on *Cacao*-growing countries, the most extensive and perhaps the most important in the work, has been brought thoroughly up-to-date. Great changes have obviously taken place in the relative importance of different countries as *Cacao* producers since 1914, and also in the methods of cultivation and preparation employed. A noteworthy inclusion here is a chart showing the exports of individual *Cacao*-producing countries from the period 1830–39 to the present time. F. N. H.

Appendices to the Kew Bulletin.—In future Appendix I of the Bulletin, "The Review of the Work of the...Gardens...", will be bound up in the volume for the year to which it refers, instead of in the volume for the subsequent year as at present, and the issue of the "List of Seeds...", as Appendix II, will be discontinued. As a result of these two changes the volume for the year 1932 will contain two Appendices, namely the "Reviews" for the years 1931 and 1932. Subsequent volumes will contain only one Appendix, namely the "Review" for the current year.

The "List of Seeds" will continue to be issued as a separate publication and those who have in the past received this list for the purpose of seed-exchange will continue to do so. Those, on the other hand, who have received it only as part of the Bulletin and who do not exchange seeds with the Gardens, will not receive it in future. Copies, however, will be available for purchase from H. M. Stationery Office. In order to form an estimate of the number of copies required, the Director would be glad if those readers who wish to purchase the "List" in the future would communicate with him before October 31, 1932.

Mr. Adams' Works on Diatomaceae.—In the note on this subject, *Kew Bulletin*, 1932, 250, the statement that Mr. Adams' collections contained "21,000 slides comprising over 1,000,000 diatoms" should read "comprising over 100,000 diatoms."

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